A Treatise of the

RICKETS:

Being a Disease common to

CHILDREN.

Wherein (among many other things) is shewed,

1. *The Essence*, 2. *The Causes*, 3. *The Signs*, 4. *The Remedies of the Disease.*

Published in Latine,
By *Francis Glisson*, *George Bate*, and *Abasuerus Regemorter*: Doctors of Physick, and Fellows of the Colledge of Physitians of *London*.
Translated by Phil. Armin.

Enlarged, Corrected, and very much amended throughout the whole Book.

By *Nich. Culpeper* Gent. Student in Physick and Astrology.

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The Preface to the
READER.

Courteous Reader.

FOr the space of five years and more, we have mutually communicated by written Papers something concerning this Affect in private meetings, (which some of us Physitians use sometimes to have for Exercise sake in the works of Art) when these things had opened a way in some sort to the deeper enquiry and search after the condition and cure of this Disease; we thought it might prove a very successful undertaking to recal those Papers once again to a Review; and (those things being culled out which might be best accommodated to this use) to prepare a perfect Tractate of this Disease. That Care by common suffrage was entrusted to Dr. Glisson, Dr. Bate, and Dr. Regemorter, who purposed at first to divide this business among themselves, according to the parts of the future Tractate, and to assign to each one his proper task; But when Dr. Glisson in the judgement of the rest, had accurately interweaved his part (which comprehending the finding out of the Essence of this Disease) and in that had propounded many things different from the common opinion of Physitians (though perhaps the less different from the truth) we altered our Resolutions, and committed the first Stuff of the whole work to be woven

by

by him alone, least at length the part should arise deformed, misshapen, and Heterogeneous *to themselves. He accepted the offer, but with this condition, that whilst he was employed in beautifying and adorning this part, the other two should often hold consultation with him, and confer unto the Use of their Covenants of free Commerce by their own Observations concerning this Affect, and that those things which should be delineated and shaped by his labour and study, should presently undergo the examination and judgement of the rest, as if they had been fashioned by their hands. And so at length we have brought this work (such as it is) to perfection, and have offered it to the publick view, being by no means moved thereunto by an itch of writing (which is the Epidemical custome of this age (but by this consideration only, That because we are not born for our selves, we might make these (such as they are) common, which in some measure may advance the health of Infancy and tender age (in which for the present a greater part of Mankind, but for the future all Mankind is comprehended) and likewise propagate an Encrease unto Learning: with this hope also, That by this Example we may invite the wits of other most Learned men to make inquisition into the Essences of Diseases and their Causes, and to examine these our Labours that Posterity may enjoy them yet more perfect. But the obscure Essence of this Disease, and this our daring to tread in unbeaten paths (were we silent) might obtain a pardon, and modestly challenge a candid Interpretation for all defect, lapses, and errors in these our Endeavours. Finally, expect no flashes of Rhetorick and Courtly-language;*

Nobis non licet esse tam disertis,
Musas qui colimus severiores.

And indeed the condition of the matter forbids all such painting, in such a manner,

Ornari res ipsa negat, contenta doceri.

Farewell (kind Reader) and peruse them as we dedicate them, that is, with an ingenious and candid mind.

F. G.
G. B.
A. R.

The Name of those Doctors who by written Papers contributed their Observations to our first Exercise upon this Affect.

Dr. Francis Glisson.
Dr. T. Shease.
Dr. G. Bate.
Dr. A. Regemorter.
Dr. R. Wright, *dead.*
Dr. N. Paget.
Dr. J. Goddard.
Dr. E. Trench.
Fellows of the Colledge of Physitians at London.

A Treatise of the RICKETS.

CHAP. I.

The Antiquity and first Origine of this Disease, the Name of it, and the Derivation of the Name.

THAT some new Diseases altogether unknown to the Ancients, have for some Ages lately past invaded divers parts of *Europe*, is a known and undoubted truth (whether we attribute it to the vicissitude of things, or impute it to the Sins and Impieties of men, and their corrupt manners) as the French-Pox, the Scurvy, the † Plica, and the like; in which number this very affect we are now about to handle, may be justly Registred. For if we examin al the diseases of Infants & children described either by the Ancients or Modern Writers in their Books of the Diseases of Infants, we shall meet with none which with a sufficient

† *A most loathsome and horrible Disease in the Hair, unheard of in former times, bred by modern luxury and excess: It seizeth specially upon Women; & by reason of a viscous venomous humor, glues together (as it were) the*

hair of the head with a prodigious ugly folding & entanglement: ſometimes taking the form of a great Snake, ſometimes of many little ſerpents: full of naſtineſs, vermine, and noyſome ſmell: And that which is moſt to be admired, and never eye ſaw before pricked with a needle, they yield bloody drops. And at the firſt ſpreading of this dreadful Diſeaſe in Poland, *all that cut off this horrible and ſnakie hair, loſt their eyes, or the humor falling down upon other parts of the body, tortured them extreamly. It began firſt, not many years ago in* Poland: *It is now entered into many parts of Germany.* H. Saxo. *Profeſſor of Phyſick in* Padua.

‡ *A Diſeaſe in the head, coming from Rheume.*

exactneſs doth delineate the condition and Idea of this evil For although it may ſeem to hold a correſpondence, or to have ſome affinity with a chronicall Feaver, a Conſumption, the extenuation or leanneſſe of Infants, and the ‡ Hydrocephalos; yet to ſpeak truth it is an affect evidently different from them in the Species. For you may obſerve many to be vehemently afflicted with this Malady without any Feaveriſh diſtemper, or any cauſe of ſuch ſuſpition: in like manner, although a Conſumption doth frequently ſupervene upon this Diſeaſe before the diſſolution of the Patient, yet is it ſeldome ſeen to accompany the firſt invaſion thereof, as for the meagerneſs or leanneſs, although ſome parts are perpetually obſerved in this

this affect to be made lean, yet this doth not happen in all alike, as in a right and true leanneſs, but you may perceive the parts about the head and face to be in a thriving condition as to outward appearance, and well complexioned, even to the laſt day of life. Finally, The Hydrocephalus is very frequently complicated with this affect, yet we have diſſected ſome whoſe Brain hath been ſufficiently firm, and not over-moiſtned with this ſuperfluous humor. Some have conjectured, that this Diſeaſe is an imp or fruit of the French-Pox or Scurvy, deſcending from the viriated Bodies of the Parents upon the Children: For we deny not but the Parents being infected with the Scurvy or the venereous Pox, may propagate and bring forth an Iſſue, not only affected with that Pox & Scurvy, but likewiſe infected with this evil, and this even hath alſo faln under Obſervation: yet for the moſt part this Diſeaſe in the propriety of its Eſſence, hath neither affinity nor familiarity with thoſe affects, and beſides it requireth a different progreſs of cure; we have ſometimes likewiſe obſerved a ſtrumatical and ſwelling Malady to be complicated with this; but we have alſo many times beheld this to be well diſtinguiſhed from that, and that from this.

But why do we dwell ſo long upon this inquiſition? ſeeing that he, who will accurately contemplate the ſigns of this affect, as in their due places they ſhal be propounded, may moſt eaſily perſwade himſelf, That this is abſolutely a new Diſeaſe, and never deſcribed by any of the Ancient or Modern Writers in their practical Books which are extant at this day, of the Diſeaſes of Infants.

But this Diſeaſe became firſt known (as near as

we could gather from the Relation of others after a ſedulous enquiry) about thirty years ſince, in the Counties of *Dorſet* and *Somerſet*, lying in the weſtern part of *England*; ſince which time the obſervation of it hath been derived unto other places, as *London*, *Oxford*, *Cambridge*, and almoſt all the Southern and Weſtern parts of the Kingdom: in the Northern Counties this affect is very rarely ſeen, and ſcarcely yet made known among the Vulgar ſort of people.

The moſt received and ordinary Name of this Diſeaſe is, The RICKETS: But who baptiz'd it, and upon what occaſion, or for what reaſon, or whether by chance or advice it was ſo named, is very uncertain.

However it obtained that Name, yet in ſo great a variety of places through which it hath ranged, it hath not to this day been known by any other Denomination.

But it is an accident well worth our admiration, That this Diſeaſe being new, and not long ago nameleſs, at leaſt not known by this Name, neither ſpreading ſo much in remote as in adjacent places, yet no man hitherto could be found out, who knew, or could ſhew, either the firſt Author of the Name, or the Patient to whom the appellation of the Diſeaſe was firſt accommodated, or the peculiar place where it was done, or the manner how it came to be diſperſed among the common people: for the Inhabitants having gotten a Name for the Diſeaſe, receive it with acquieſcence, as a thing done with diligence and deliberation, and are not at all further ſolicitous either about the Name, or the Author of the Name.

But

But becauſe they which are expert in the Greek and Latin tongues, may peradventure expect a Name from us, whereof ſome kind of Reaſon may be given; we have made fit to gather divers Names to this Diſeaſe, yet we conceive it ſomewhat unneceſſary to make a particular rehearſal of them in this place: Nevertheleſs it may perhaps be proper and profitable to commemorate the Rules which we propounded to our ſelves in the deſignation of the Name: The firſt therefore was, That the Name ſhould comprehend ſome notable condition of the Diſeaſe. The Second was, That it ſhould be ſufficiently diſtinct from the Names of other Diſeaſes and Symptoms. The Third was, That it ſhould be ſufficiently familiar, eaſie of pronunciation, accommodated to the Memory, of no undecent length, and not ſtudiouſly, and laborioufly compounded.

Whileſt we bend our employments to the ſatisfaction of theſe Rules, One of us by chance fell upon a Name which was complacentious to himſelf, and afterwards pleaſing to the reſt; now this was νόσος ῥαχίτις or indeed ῥαχίτης (for that termination is not altogether abhorrent from the common Gender) the Spinal Diſeaſe, alſo νόσος τῆς ῥαχέως, the diſeaſe of the Spine of the Back: For the Spine of the Back is the firſt and principal among the parts affected in this evil. Then no other Malady or Symptom did by the prerogative of time vindicate this appellation from it; beſides the Name is familiar and eaſie. And finally, The Engliſh Name *Rickets* received with ſo great a conſent of the people, doth by this Name ſeem to be excuſed, yea, juſtified from Barbariſm. For without any

wracking or convulsion of the word, the name *Rickets* may be readily deduced from the Greek word *Rachitis*, or *Rachites*; provided, That we will but allow that consideration of change, which in vulgar pronunciation usually happeneth to words transplanted from one Language to another.

Object. *You will say, That they which imposed first the English name* Rickets, *were peradventure altogether unskilful in, and ignorant of the Greek-tongue, or that they never thought of the Greek word* Rachites, *at least understood not that the Spine of the Back was the principal among those parts which were first affected in this Disease?*

Answer. We Answer, It concerns not us, whether they were ignorant of, or thought not upon the Greek word, or whether they did not understand the principal part that was first affected; yet are these things freely asserted. For we knew many at that time when the Disease did first spring up, and the Name was imposed, indeed learned men, and skilful in the Greek-tongue, to have their Residence in those places, to whom it was not perhaps any difficulty to observe that conspicuous debility of the Spine in this affect, and thereupon they might assign this Name unto it; although 'tis very possible, yea probable, That the common people by the error of pronunciation might somewhat pervert the Name so given, and express it, as to this day they retain it by the word *Rickets*. But whether it were, or were not so, we are not at all solicitous. If the matter were so, the imposed Name will (as is manifest) be altogether congruous, and perhaps also at the last will most fitly correspond with it. For suppose you should

ſhould fall upon ſome Name, received not ſo much by choice as chance, yet ſo fit, that a more commodious Name could ſcarce be deviſed by councel and deliberation, nor one more conſonant to Reaſon; in ſuch a Caſe, What would you do? Would you extirpate and baniſh the received word, to introduce one that was new and nothing better? This practice would uſurp upon the priviledge of Converſation, and be injurious to the cuſtom of Speaking: Words contract a value by their uſe, and ought not to be denizen'd with raſhneſs, or innovated by temerity: Or would you not rather confirm the Name received, yet as a new one, and from that time to be deduced from a new Origine: for this would be at the leaſt like a choſen Scynos inoculated upon a new ſtock, which by reaſon of the affinity with the Root, would without any difficulty receive ſtrength and nouriſhment: Or if this pleaſe you not, ſuppoſe if you pleaſe, That we now newly deviſed the Engliſh name of this Diſeaſe, and deduce it from the Greek word *Rachites*: the Engliſh word reſulting from hence would be the *Rachites*: and how little is the difference between that and the ordinary word *Rickets*? Certainly ſo little, That the vulgar pronunciation is not wont to be greatly ſolicitous about ſo ſmall a difference: But we trifle too much in ſtaying ſo long upon theſe trifles. Let the Greek name therefore of the Diſeaſe be *noſos Rachitis*, or *Rachites* (if the word may be allowed to be of the common Gender) or *tes Racheos*: in Latin *Morbus Spinalis, vel Spinæ Dorſi*: and by coyning a Latin Subſtantive out of the greek Adjective *Rachitis—idis* let the ordinary Engliſh name *Rickets* be retained, or in ſtead of it, to gratifie more curious ears, you may

ſubſtitute the *Rachites*. And thus much, if not too much of the Name.

CHAP. II.

Anatomical Obſervations collected from the Diſſection and Inſpection of Bodies ſubdued and killed by this Diſeaſe.

BEfore we attempt an enquiry into the Nature and Cauſes of this Diſeaſe, we hold it convenient to premiſe ſome few certain and undoubted things, as being obvious to the Senſes, which both demonſtrate the real exiſtence of this Diſeaſe, and may alſo be caſt for a foundation, whereon to build the Superſtructure of our Judgment and Opinion concerning this new Diſeaſe. For we would not have any man to imagine that we here treat of ſome Fictitious & Imaginary Evil, much leſs to expect that our Opinion ſhould be credulouſly embraced without examination. But this we rather aim at, That the matter of our Diſcourſe to all poſſiblity may be known and preconceived in the very entrance, that we may confirm thoſe things which we ſhall propoſe, by thoſe things that are obvious to the Senſes, as occaſion ſhall require; and that the Reader being inſtructed in theſe, may become a competent judge of our Reaſons, and with the more facility be able to interpoſe his judgment concerning each of them. We atteſt therefore, that

that many of us have been present at several Dissections of Bodies which have been separated by this Disease, and that we will in this Chapter briefly and faithfully declare those things which we have hitherto observed by long Experience and frequent Dissections, namely, Those things which we have seen with our eyes, and have handled with our hands.

In the mean time Two things are here to be premonished: The former is, That the Reader carry in his memory, That the dead Bodies which we opened were most vehemently afflicted with this disease whilest they were animated, for they are supposed for the most part to have yielded to the very magnitude of the Disease, and therefore he must not expect that magnitude of the Affect or Symptoms which we here describe, in other Bodies yet living or newly besieged. For every Disease is moved to a Consistence, and then also Nature being oppressed, and unable to maintain the conflict groweth worse and worse. The later is, that the Reader take notice, That almost all Diseases in processe of time, do unite unto themselves other affects of a different kind, and therefore that Chronical Diseases are for the most part complicated before death: Let him not therefore imagine that every preternatural thing that is found in dead Bodies, though destroyed by this affect, must of necessity belong to this evil; for perhaps it may rather have reference to some other Disease supervenient upon this before death, then to this very Malady: And the truth is, Anatomists through inadvertency, and want of due regard to this Caution, have fouly erred in their Observations, whilest they ascribe those things which concern another

another Diſeaſe, to another wherewith it was complicated before the diſſolution. The beſt prevention therefore or rectification of this error is, Not to make a raſh judgment from the inſpection of one or two bodies, but firſt by a reiterated and ſedulous experiment, to be able to diſtinguiſh what things perpetually occur, what for the moſt part, what frequently, and what but ſeldome, in the diſſected bodies that have periſhed of the ſame Diſeaſe: for you muſt know, That whatſoever is not perpetually conſpicuous in the opened Bodies diſſolved by the ſame Diſeaſe, cannot appertain to the intimate and chief Eſſence of it: for neither the Diſeaſe it ſelf can have an exiſtence being ſeparated from its Eſſence, nor the Eſſence being ſeparated from the Diſeaſe. But enough of theſe things; let us now proceed to the Obſervations themſelves.

Theſe our Anatomical Obſervations are diſtinguiſhed into thoſe which do extrinſecally occur, the Body being not yet opened, and thoſe which preſent themſelves only upon the Diſſection of the Body.

I. *Theſe of the former kind are they which are outwardly viſible upon the firſt appearance of the naked dead Body.*

1. An irregularity, or diſproportion of the parts; namely, The Head bigger then ordinary, and the Face fat & in good conſtitution in reſpect of the other parts. And this indeed hath appeared in all thoſe whom hitherto we have beheld to periſh by this affect,

ſeſt, one onely excepted, who together with this Diſeaſe had ſuppurated Lungs, and was pined and disfigured with the Ptyſick. Yet he alſo throughout the whole progreſſe of the Diſeaſe, was full faced, and had his head ſomewhat big; but for about fourteen dayes before he Deceaſed, on a ſudden all the fleſhy parts about his head conſumed away, and his face was like the picture of *Hypocrates*, not without the juſt wonder of all thoſe who beheld ſo ſudden a change.

2 The external members, and the muſcles of the whole Body were ſlender and extenuated, as if they had been waſted with an Atrophy, or a Conſumption. This (for ſo much as we know) is perpetually obſerved in thoſe that die of this Diſeaſe.

3 The whole Skin, both the true, and alſo the fleſhy and fattiſh Membrane, appeareth lank and hanging, and looſe like a Glove, ſo that you would think it would contain a far greater quantity of fleſh.

4 About the joynts, eſpecially in the wriſts and ankles certain ſwellings are conſpicuous, which if they be opened, not in the fleſhy or membranous parts, but in the very ends of the bones, you may perceive them to be rooted in their appendances; and if you will file away thoſe prominencies of the bones, you will eaſily perceive them to be of the ſame ſimilary ſubſtance with the other parts of the bones.

5 The articles or joynts, and the habits of all the external parts are leſs firm and rigid, and more flexible then at another time they are obſerved to be in dead bodies; and in particular the Neck after death is ſcarce ſtiff with cold, at leaſt much leſs then in other Carkaſſes.

6 The

6 The Breſt is outwardly lean, and very narrow, eſpecially under the arms, and ſeemeth on the ſides to be as it were compreſſed, the ‡ Stern alſo is ſomewhat pointed, like the Keel of a Ship, or the breſt of a Hen.

‡ *That part of the breſt where the ribs meet.*

7 The top of the ribs to which the ſtern is conjoyned with griſtles, are knotty, like unto the joynts of the Wriſt and Ankles, as we have already ſaid.

8 The Abdomen indeed outwardly in reſpect of the parts continent is lean, but outwardly in reſpect of the parts contained it is ſomewhat ſticking out, and ſeemeth to be ſweld and extended. And theſe have been our Obſervations before the opening of the bellies.

II. The Abdomen being opened, we have Noted theſe things:

1 The Liver, in all that we have diſſected, hath exceeded in bigneſſe, but was well coloured, and not much hardned, nor contaminated by any other remarkable vice. We deſire ſome bodies ſhould here be excepted, in which other Diſeaſes before death were complicated with this, as in a Dropſie and an extream Conſumption we remember to have happened.

2 The Spleen (namely ſo far as hitherto it hath been lawful for us to obſerve) for the moſt part is not to be contemned, whether you conſider the magnitude, the colour, or the ſubſtance of it, notwithſtanding we do not deny but it may otherwiſe happen in regard of a complication with other Diſeaſes.

3 We have ſometimes eſpied a wheyiſh water to have glided into the cavity of the Abdomen, but indeed not often, nor in any great plenty.

4 The Stomach and Guts are ſomewhat more infected with flatulent humors, then ſound bodies uſually are, which partly may be the cauſe of that extenſion of the Hypochondriacall parts above mentioned.

5 The Meſentery is ſometimes faultleſſe, and ſometimes affected with glandulous excreſcences bigger then ordinary, if not with ſwelling bunches: But concerning the ſweet-bread we declare nothing for a certainty; only we ſuſpect that Obſtructions, if not a Schirrhus, may ſometimes invade that part. But thus we delegate, to the enquiry of others.

6 The Kidneys, Uretors and Bladder, unleſſe there be a concomitancy of ſome other Diſeaſe, are laudably ſound. We obſerve in general of all the Bowels contained in this Belly, that although the parts containing them, as we have noted above, are very much extenuated and amaciated, yet are they as large and as full, if not larger and fuller, then thoſe ſeen in ſound bodies, as hath been ſaid of the Liver.

III. *The Sterne being with-drawn, theſe things have preſented themſelves in the breſt.*

1 A certain adherence or growing to of the Lungs with the ‡ Pleura which hath been more or leſſe diſcernable in all the Bodies which hitherto we

‡ *A thin and ſmooth skin which cloatheth the ribs in the inner ſide.*

we have cut up. Yet we ſuppoſe that this affect may happen without any ſuch nouriſhment, although in the advancement of the Diſeaſe for the moſt part it cometh before the Patient die.

2 The ſtoppings or ſtuffings of the Lungs are no leſs frequent, eſpecially in thoſe co-adhering parts. Hard humors alſo engendered by a thick, viſcous and blackiſh blood, ſometimes in one, ſometimes in many of the ſtrings of the Lungs, yet are not theſe alwayes conſpicuous, many times alſo Impoſthums and Ulcers,

3 One amongſt us doth atteſt, That he once ſaw glandulous knobs and bunches, ſo numerous, That they ſeemed to equallize, if not exceed the magnitude of the Lungs themſelves: They were ſcituated on both ſides between the Lungs and the Mediaſtinum (that is the Membrane that divides the middle belly) and were extended from the Chanelbone to the Diaphragma.

4 In the cavity of the Breſt we have ſometimes ſeen a collection of wheyiſh waters, and indeed more frequently then in the cavity of the Abdomen, but not in all.

5 One amongſt us hath likewiſe ſeen this affect complicated with a great Impoſthume, and with the Ptyſick: the Stern being removed, all the Lungs on the left ſide were infected with an Impoſthume, and on every ſide growing to the Pleura, and the humor being lightly cruſhed, a copious, thick and ſtinking Matter of a yellowiſh colour, flowed out thorow the ſharp artery into the very mouth: The outward Membrane of the Lungs, whereby they firmly adhered to the Pleura, appeared thicker then ordinary, and by the mediation of it, the ſtrings on

that

that ſide did ſo grow together, that you could ſcarce diſtinguiſh them for ſuch: the ſame Membrane alſo involved both the Lungs and alſo the Impoſthume it ſelf, which being opened, the magnitude of the Impoſthume was diſcernable, which by the eſtimation of thoſe that were preſent, contained at the leaſt two pounds of water.

6 The kernel in the Chanel-bone in Childhood is alwayes obſerved to be great, and perhaps greater yet in thoſe who have died of this Diſeaſe.

IV. The Skull being ſawed thorow in a circular Figure, and the little cover being removed, we have obſerved theſe things:

1 The Dura Mater hath been more firme, and adhered to the Skull in more places then is uſual in men of ripe years: perhaps the ſame may be obſerved in other Children not affected with this evil, although, as we ſuppoſe, not in ſo great a manner: for certain it is, That in new born Infants there are many & ſtraight connexions between the Pericranium and the Dura Mater which are afterwards broken off, and are ſcarce diſcernable.

2 In ſome Bodies that we have diſſected between the Dura and the Pia Mater, and in the very ventricles of the Brain, we have found wheyiſh and wateriſh humors; from whence it is manifeſt, That this affect is complicated with the Hydrocephalus.

3 We have found the Brain in others that we have opened, to be firm and inculpable, and not overflowed with any wateriſh congeſtions.

4 Laſtly, We have obſerved in ſome Bodies late-

ly

ly opened, That the Carotides have exceeded their juſt proportion, and ſo alſo have the jugulary Veins; but the Arteries and the Veins which are delated to the outward parts, were of an unuſual ſlenderneſs.

But whether or no this be perpetual in this affect we cannot yet witneſs by an ocular teſtimony; yet we conjecture, That it happeneth ſo perpetually, but it came not ſooner into our minds to examine it, ſince the beginning of our Anatomical enquiries into this ſubject.

Theſe things being premiſed, our next Diſquiſition ſhall be to find out the Eſſence of the Diſeaſe.

CHAP.

CHAP. III.

Certain Suppoſitions are propoſed for the eaſier finding out of the Eſſence of the Diſeaſe. Firſt, of the Eſſence of Health. Secondly, of the Eſſence of a Diſeaſe. Thirdly, of a threefold Diviſion of Health and Diſeaſes. The Explication of the third Diviſion, and the Uſe of the ſame. The Deſcription of a natural Conſtitution, and the exaltation of it. The fourth Suppoſition of the Combination of three Conſtitutions in the ſame parts.

THat we may proceed the more diſtinctly and clearly in the finding out of the Eſſence of this Diſeaſe, we judged it very advantagious to premiſe theſe ſubſequent Suppoſitions:

I. *That the Eſſence of Health doth conſiſt in ſome Conſtitution of the Body according to Nature.* But ſeeing this is twofold in the kind, one *Eſſential* and neceſſary, reſpecting the τὸ *eſſe* ſimply, which during life continueth immoveable and immutable under various affections, and is indiviſible: The other *Accidental*, having reference to the τὸ *bene eſſe*, which in reſpect of the whole Animal, is both moveable and mu-

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table; and hath a great latitude, and can be preſent or abſent without the diſſolution of the whole. Health conſiſts not in the former, but in the later Conſtitution.

II. *That the Eſſence of a Diſeaſe in like manner conſiſteth not in the Eſſential Conſtitution*: For ſo the diſſolution of the whole would by and by follow: But in the *Accidental* Conſtitution, namely ſuch an one, as in reſpect of the whole can be preſent or abſent without its diſſolution. We have ſaid (and not without reaſon) that this Conſtitution wherein Health and Sickneſſe are founded, is moveable and accidental in reſpect of the whole; for even this alſo in reſpect of ſome part may be eſſential: as for example, a finger being cut off, a Diſeaſe ariſeth in the defective number of the parts, which in reſpect of the whole, is founded upon an accidental Conſtitution; for that finger may be preſent or abſent without the diſſolution of the whole; but in reſpect of the loſt member it is founded upon an Eſſentiall Conſtitution, for this Diſeaſe being ſuppoſed, the Eſſence of that finger periſheth.

III. *That the Conſtitution wherein the Eſſence both of Health and Sickneſs conſiſteth, admits a threefold manner of diviſion or diſtinction in the method of Diſcipline.* The firſt is ſomewhat thick, and is reſolved into parts altogether Concrete, namely, It proceedeth Κατὰ τόπους, according to the diviſion of the parts from head to heel. The ſecond is purely abſtracted, and ſearcheth out all the Elements of the moveable Conſtitution, from whence cometh the diviſion of Diſeaſes into ſimilar, organical and common; and then again thoſe various ſubdiviſions into diſtempers, faults of figure, ſuperficies, cavities and paſ-

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ſages, of magnitude, number, ſite and continuity. The third is as it were a middle manner, and although it hath been hitherto neglected, yet we dare avouch, That it may have its uſe, and that no contemptible one in the handling of Diſeaſes, and the finding out of the cauſes of the Diſeaſe; and it is divided into a Conſtitution Natural, Vital and Animal.

The firſt is proper to, and inherent in every part, abſolutely competible to it, and without any dependance upon the other parts according to the Eſſence of it ſimply: This remaineth a while after death, till it be reſolved by Putrifaction, Ambuſtion, ſimple Exiccation, Mummification, Petrification, and the like violent Cauſes, This Conſtitution in reſpect of its ſimple Eſſence, doth not depend upon thoſe Members which miniſter an Influx, but it dependeth upon them both in reſpect of its Conſervation, and likewiſe of its Operation. For the vital influx ceaſing after death (which as it were the ſalt and condiment of it) quickly periſheth, and as long as the creature liveth, this is variouſly affected by the influxes, and thereupon the actions are either promoved or interrupted.

The Second is the Vital Conſtitution, which is produced by that continual influx from the heart thorow the arteries into the parts of the whole body. This alſo it admitteth by degrees, and is often ſubject to variations more or leſs, and ſometimes alſo ſeemeth to ſuffer a kind of ecclips, as in a ſwooning, a ſyncope, &c. yet it perſevereth from the beginning to the laſt period of life (at leaſt in its fountain) and in ſome other parts.

The Third is the Animal Conſtitution, which is derived

from the Brain thorow the Nerves into the Organs of Senſe and Motion. This is many times totally wanting in many parts, the life notwithſtanding remaining; yea it might for a long time together be defective in ſeveral parts, or all the parts, did not reſpiration, which is abſolute neceſſary unto life, depend upon it. Theſe Conſtitutions therefore keep ſuch a connexion between themſelves, that the ſecond doth eternally and continually preſuppoſe the exiſtence of the former, and the third of the ſecond; but there is not back again ſo abſolute a dependance between them, becauſe (as we have even now ſaid) the former can for ſome time ſubſiſt without the ſecond, and the ſecond commonly altogether without the third: And theſe three Conſtitutions may in moſt bodies be manifeſtly perceived, yet we affirm not that they may be found in all. The natural indeed and the Vital are wanting to no part: but the Animal is defective in the Bones (though the teeth will admit ſome doubt) griſtles, perhaps ligaments, and ſome ſubſtances, as of the Liver, Spleen, &c. we aſſert therefore this threefold Conſtitution to be in all thoſe parts, to whom the Natural, Vital and Animal Faculty is communicated. For although theſe Faculties as to the firſt act may be ſaid to depend upon the Soul (which relation hath indeed no relation to the Medicinal art) yet in reſpect of the ſecond act they are neceſſarily rooted in ſome material Conſtitution of the parts to which they belong. For whereas ſome ſay that the Vital Faculty is derived from the Heart, and the Animal from the Brain unto the other parts, that muſt not ſo be underſtood, as if the Faculties themſelves in a wandring manner were tranſient from part to part (for the paſſing of

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an accident from ſubject to ſubject cannot be conceived by any underſtanding) but that the Vital Faculty is derived with, and in the vital Spirit from the Heart unto the parts, or at leaſt is excited by ſome motion of the Heart and Arteries in the parts themſelves, and in like manner the Animal Faculty doth deſcend in & with the Animal Spirit by the Nerves, or is produced in the parts by ſome motion of the Nerves in the Brain. Which way ſoever it comes to paſſe, we muſt needs confeſſe that ſome alteration is imprinted in the part it ſelf receiving it either from the ſaid Spirits, or from their motions. Which alteration as it is here granted to be the root of the Faculty, either Vital or Animal in the reſpective parts, ſo is it a moveable Conſtitution, becauſe it can be variouſly changed, remitted and intended without the diſſolution of the whole; and it is the Conſtitution wherein either Health or Sickneſſe may conſiſt, ſeeing that whenſoever alteration is deficient unto the parts wherein it ought to be, or any other wayes adminiſtred then is requiſite, the action will thereupon be unavoidably depraved; but if it be rightly performed, then ſound and perfect health is ſaid to be preſent from the part of that Conſtitution. Conſidering therefore that there are two kind of Alterations beſides the natural and inherent Conſtitution, one from the influx of the Heart, another from the influx of the Brain in moſt parts; and ſeeing the ſaid alterations, as they themſelves are more perfect or more imperfect, do render the Faculties in the reſpective parts (at leaſt as to the ſecond act) more perfect or imperfect, and that the actions are thereupon depraved or ſound, it is neceſſary that this threefold Conſtitution reſide in moſt of the parts,

and that the ſaid kind of alterations be medical conſtitutions whereon Health and Sickneſs may be grounded.

That this Diviſion or Diſtinction is not frivolous or altogether unprofitable, appeareth from hence, becauſe the practical Phyſitians in their Methods do rightly admoniſh, that in obſcure Diſeaſes the Faculties muſt be accurately obſerved, when their actions are ſeen to be depraved, which diligence may ſerve as it were for a Manuduction to guide us to the Origine of the affect; now if it be a conſideration of ſo juſt importance to note the interrupted Faculties in Diſeaſes, certainly it will be an exerciſe of no leſs moment to take cognizance of the Conſtitutions themſelves, upon which thoſe Faculties have an immediate and ſtrict dependance.

Now leaſt any man ſhould conceive that there is almoſt a co-incidence between this third Diviſion and the ſecond, he may obſerve, if he will diligently weigh the matter, That every member of this diviſion doth in ſome manner include all the members of the next precedent, namely, that the natural Conſtitution doth comprehend primarily indeed the ſimilar Conſtitution, but that ſecondarily and in order to the whole creature, it containeth in a ſort the conformation and continuity, in like manner, that the Vital and Animal Conſtitution do in their way ſo clearly participate of all the Members of the ſaid Diviſion, that to offer proofs of it were an unneceſſary undertaking: Onely we deſire the Reader to take notice (which alſo we even now intimated) That the natural Conſtitution primarily and principally hath reſpect unto the temperament, the common qualities, the plenty of the Spirits, and the peculiar

culiar diſpoſition of them (which by ſome are referred to the form and the whole ſubſtance) but that it hath reſpect unto the manner of the Organe and the continuity as it were ſecondarily, and in order to the whole creature, and that it can ſcarce be otherwiſe hurt or vitiated by them. Yet we muſt not deny but that the natural Conſtitution is ſometimes vitiated as it is meerly Organical, for thus it falleth out in the obſtructions of the naturall paſſages; as for example, when a ſtone is impacted or grown to hardneſs in the paſſage of the Meter or the yard, and in the like caſes: but this happeneth unto it, eſpecially in as much as the paſſage is ordained for the uſe and conſervation of the whole; but for the moſt part the Organical vices in the natural Conſtitution are of leſs note and conſideration then the ſimilar.

Theſe things may ſuffice to be ſpoken in a general way of this triple Conſtitution. We will now in particular ſpeak a few things of them in few words.

The *Natural Conſtitution* which is proper unto and inherent in every part, may be known by this deſcription, That it is the manner of the natural Being, ſetled in the parts, competible to them, in as much as they are aptly conſtituted by their temperament, and common qualities, by their ſufficient potion and convenient diſpoſition of ingenerated Spirits, and by their juſt conformation and continuity, to a perfect performance of natural actions, together with the concurrence of the Vital and (perhaps the Animal) influx. Therefore when there is in any part a juſt temperament, convenient common qualities, an exquiſite proportion, and harmonious diſ-

poſition of inherent Spirits. Finally, when there is a laudable conformation and unity, and yet notwithſtanding all this, the natural action is depraved, we may well conclude that it is not vitiated by the natural Conſtitution, but by reaſon of the concurrent cauſe, namely the vital or natural influx, or of both together; for the natural actions in creatures in regard of the union & wedlock of life, are exalted to a more eminent condition then otherwiſe they would attain unto by the natural Conſtitution alone. And from hence it comes to paſs, That although the natural Conſtitution in ſlain Creatures remaineth after death undepraved for a while, yet the attractive and retentive Faculty, the concoction of the aliment, and the expulſion of the excrement do altogether ceaſe: And in Diſeaſes alſo many times the natural Conſtitution is at firſt untoucht, yet the natural action is vitiated meerly by the defect of the due concurrence of the vital influx: after the ſame manner ſometimes the natural and vital Conſtitution being ſound and healthful, yet ſome natural action is depraved by reaſon of the defect of ſome animal influx and concurrence: but this for the moſt part happeneth only in the Nervous, Fibrous and Membranous parts, eſpecially where they make a hollowneſſe, but ſeldom or not at all in the ſubſtance of the parts: As in the Palſy, the excrements are many times unduly retained, by reaſon only of the aſtoniſhment and inſenſibleneſs of the guts, the other conſtitutions being ſound. Therefore in theſe caſes, when ſome natural action is hurt, we muſt not preſently conclude that the natural Conſtitution is firſt vitiated, but we muſt with diligence enquire out that Conſtitution which is firſt vitiated, for that

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is to be looked upon as the root and first essence of the evil; in like manner, if some vital action be depraved, we must not presently infer that the vital Constitution is primarily vitiated; because sometimes the first Origine is more rightly deduced from the natural, or perhaps the animal Constitution: as for example, Through the intensiveness of cold, a finger is mortified by inflammation: in this case it is true, that the influx of the vital blood is plainly intercepted; yet the beginning of that interception must be sought out in the natural Constitution of that very part so benumned; So also in a Convulsion the circulation of the blood is perhaps something disturbed and interrupted; but the first depravation must be ascribed to the animal, not to the vital Constitution. On the contrary, in a Feaver the Head is invaded, but the source of the evil will peradventure be found out in the vital Constitution: so perhaps the Flesh is wasted, and all the natural Spirits are decayed; yet the root of the evil will be found out in the vital, not in the natural Constitution: So that any Constitution of the three before named may be in several Diseases, sometimes the first, sometimes the second, and sometimes the third cause of vitiated actions.

Not only many other parts of the body (yea simply all the sensible) which exhibit not an influx, neither are subservient as delatory parts, do naturally admit this threefold Constitution, but besides also even the Heart it self, and all the arteries, and the Brain & all the nerves, so that the Brain (excepting the fault in its natural Constitution) may be cherished and helped by the vital Spirit which is transmitted thorow the veins and the arteries, being well affected,

affected, or vitiated and hurt if that be ill affected: And after the ſame manner alſo may the Heart by the animal Spirit which hath an influx thorow the recurrent nerve of the ſixth pair, the arteries alſo by the animal influx thorow the nerves by a way perhaps not yet found out: And Finally, The Nerves alſo by the vital Spirit deduced thorow the Arteries.

CHAP. IV.

That the Eſſence of this Diſeaſe conſiſts not in the Animal or Vital, but in the Natural Conſtitution; not as Organical, but as Similar: Three Limitations are Propounded.

THeſe things being Preſuppoſed, We ſhall proceed to enquire in what Conſtitution of the parts the firſt Root or Eſſence of this affect is lodged. Be the firſt Concluſion therefore this,

The Firſt Root of this Affect is not in the Animal Conſtitution, or in that which dependeth upon the Influx of the Brain into the parts. Indeed we confeſſe that all the nerves which without the Skull proceed from the ſpinal marrow, are found to be looſe and weak in this affect; yet this doth not here ſeem to ariſe from a defect of the influx of the Brain, which we thus prove, Firſt the looſneſſe and weakneſſe

neſſe of the nerves, which cometh primarily from the Brain, is almoſt alwayes conſociated with ſomnolency and drowſineſſe; but this Symptom happeneth but rarely, and by accident only in this affect. Secondly, As we remember, we never knew the Palſy or the Apoplexy to ſupervene or follow upon this Diſeaſe; but it ought neceſſarily ſo to do, and that very often (at leaſt in the confirmation of the Diſeaſe) if this looſneſs and weakneſs of the nerves ſhould take beginning from a defect of the influx of the Brain. Thirdly, We have obſerved the Brain to be ſufficiently firm and inculpable in many diſſected after death. Fourthly, For the moſt part thoſe that are afflicted with this evil are ingenious in reſpect of their age, which doth evidently atteſt the vigour and vivacity of the Brain.

The Second Concluſion. *The firſt root of this affect is not in the Vital Conſtitution, or in that which dependeth upon the Influx of the Heart into the parts.* An unequal diſtribution of blood indeed almoſt (if not altogether) perpetual may be obſerved in this affect: nevertheleſs the chief reaſon of this inequality muſt be aſcribed, not to the inequality of the influx of the Heart or Arteries, but to the unequal reception and unaptneſſe in the parts themſelves to receive it; for the Heart and the Arteries do for their part indiſcriminately or equally diſtribute the blood with the Spirits every way into the parts. But if it ſo fall out that an Artery of ſome part be interrupted in his function by reaſon of the benumnedneſſe and ſtupefaction of that part, or the parts adjacent, there is a neceſſity that the blood muſt be minutely tranſmitted thither, and ſo unequally in reſpect of the other parts which expeditely and aptly receive the blood.

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Therefore in this caſe this inequality of diſtribution doth properly and primarily depend upon a pre-exiſtent fault without the artery pertaining to the natural Conſtitution of the parts.

Object. But ſome may Object, *Although perhaps the aforeſaid inequality hath no dependance upon the Heart, yet it may happen that a weak Pulſe may ſuffice to diſtribute the blood thorow the leſſer Circulations in the inner parts, which nevertheleſs may not be altogether ſo ſufficient to undergo that duty thorow the greater Circulations in the outward parts which are more remote from the Heart, the fountain of blood.*

Anſw. We Anſwer, That this Objection was formerly of ſo great importance with one of us, that he ſuppoſed ſuch an inequality of the vital influx did belong to the prime Eſſence of this Diſeaſe, and did therefore endeavor to deduce the reaſon of the firſt Symptoms from it. But after ſecond thoughts, the matter being more nearly and deeply examined, he was of Opinion, That this inequality of the vital influx had no relation to the primary, but to the ſecondary Eſſence of the Diſeaſe. But we return to the ſolution of the Argument. And firſt we grant indeed that in this affect there is an unequal diſtribution of the blood; and that in the internal parts and in the head it is more liberal, in the external more ſparing. Secondly, we grant that the Circulation of the blood may be kept in the inward parts, even although no Pulſe appear in the outward parts; but this happeneth only in a vehement either weakneſs or oppreſſion of the vital Spirits, as in a ſwooning, and a ſtrong Hyſterical Paroxiſm, or fit of the Mother,

Mother, in which affect ſome that have been accounted for dead have been ſeen to revive again. Thirdly, we grant that a more liberal Circulation of the blood may be in the internal then the external parts, yea and in ſome one external part more then in another, as it happeneth in the inflammation of ſome external member.

Theſe things being granted, we affirm, that in the *firſt Caſe* the inequality of the diſtribution of the blood doth not principally depend upon the weakneſſe of the Pulſifical vertue for as much as concerns the heart; and the reaſon hereof is plain. For the heart, as we have already ſaid, doth emit the blood indiſcriminarly or equally, and with one continuation from it ſelf into the Aorta or chief artery, even at ſuch time when as the Pulſe is moſt weak. This artery doth exonerate or disburthen it ſelf again with all poſſible expedition, and from hence proceedeth the inequality of the diffuſion of the blood, as the blood is more eaſily impelled from one rivulet then from another. This inequality notwithſtanding muſt not properly and primarily be attributed to the heart, but to the recipient parts, and to the particular tranſmitting arteries. For any primary affect of the heart is neceſſarily univerſal, and communicated to all the parts of the body: wherefore although we grant this inequality of the Circulation of the blood to be in the ſecondary Eſſence of this Diſeaſe, yet we exclude it from the primary.

Moreover in the *Second Caſe* propounded, we ſay that there is a great diſparity between the caſes of extream neceſſity, and ordinary caſes. Neither indeed do we know whether in the ſaid caſes the circula-

culation in the inward parts, howſoever it be granted, be of any moment. And for ſo much as concerneth the preſent buſineſſe, we deny any ſuch debility of the heart in this affect, that the Pulſe ſhould be defective in the outward parts; yea we have not obſerved that any one afflicted with this Diſeaſe hath been prone to fall into an extaſy, or a ſwooning; which would readily happen, if the origine of the Diſeaſe were rooted in the debility of the heart it ſelf. Beſides, when we have ſeen ſuch as were ſick in their tender age, to endure without any loſs of ſtrength, ſometimes a liberal eduction or flowing forth of the blood from the opened veins of their ears, yea, and ſeen it ſometimes reiterated with good ſucceſſe. Finally, When alſo they have very well endured purgations, with reſpect had to their age, it doth not appear to us how the firſt root of the evil can be aſcribed to the weakneſs of the vital conſtitution.

In the *Third Caſe* it is evidently manifeſt that the firſt cauſe of this unequal circulation of the blood is ſome diſpoſition of an outward part, as in an inflamed member, laboring under ſome private Diſeaſe, there happeneth a more full and impetuous Pulſe by reaſon of the accidental heat of the artery, infuſed by the immoderation of heat which is in that outward part.

Therefore ſeeing that the Eſſence of this affect cannot be primarily rooted in the animal nor the vital Conſtitution of the parts (as we have now ſhewed) it followeth (which ſhall be the Third Concluſion) *that the primary Eſſence, or firſt root of this affect conſiſteth in the proper or inherent conſtitution of the parts:* But becauſe the natural Conſtitution (as we have ſaid

ſaid above) conſiſteth partly in the common qualities and the temperament, and partly in a juſt plenty and diſpoſition of the inherent Spirits, and again partly in the organical conſtruction and continuity; our next enquiry muſt be to find out in which of the prementioned conſtitutions it lodgeth, and whether it be rooted in one alone, or in many, or in all together. Be the Fourth Concluſion therefore this:

This affect is not radicated in the Organical Conſtitution of the parts. For although in progreſs of time the Organs themſelves are divers wayes affected in reſpect of their confirmation, quantity and ſite, as it is ſufficiently manifeſt from the encreaſed bulk of the head, liver, &c. from the tumors of the bones unto the wriſts, the ankles, and the extremities of the ribs; from various obſtructions, and the extenuation of the outward parts; ſeeing nevertheleſs that all theſe things depend upon a higher origine, and howſoever alſo we may neceſſarily admit theſe things in a Diſeaſe confirmed, and now variouſly compounded; yet in the original Eſſence, we preſume, for the ſubſequent reaſons they are to be rejected.

Firſt, *Becauſe the depravations aforeſaid in the Organical parts do not appear preſently in the beginning of the Diſeaſe, but encreaſe afterwards by little and little*: And although perhaps ſome of theſe may be ſaid from the beginning to have taken root in the body, notwithſtanding they cannot as yet be immediately diſcerned by the ſenſe, neither do they manifeſtly hurt any actions, and for that reaſon they cannot appertain to the firſt Eſſence of the Diſeaſe.

Secondly, *Becauſe the Organical vices aforeſaid are not the Cauſes, but the Effects rather of the chief Symptoms which from the beginning exhibit themſelves in this affect.*

affect. For the augmented figure of the head, liver, &c. the ſtanding out of the bones, and the leanneſſe of the external parts, are more rightly referred to the inequality of the nouriſhment, then on the contrary, the inequality of the nouriſhment ſhould be aſcribed to them: For when one part doth exceſſively encreaſe, and another is defrauded of a due & decent augmentation, there is a neceſſity that a diſproportionate and an unequal nouriſhment muſt not only be preſent in the parts, but alſo have had a preexiſtence in the body, whereby one part is nouriſhed, and another neglected beneath a mediocrity. But ſeeing this unequal nouriſhment is a depraved action, and ſo a Symptom preſuppoſing ſome pre-exiſtent Diſeaſe, and yet withal (as we have ſaid) doth precede, as a cauſe, the organical vices aforeſaid, it is manifeſt that thoſe organical vices are not the firſt root of this Diſeaſe. As for the obſtructions which indeed are for the moſt part conjoyned with this affect, yet nevertheleſſe there is a great deal of reaſon to exclude them from the firſt Eſſence of this Diſeaſe, becauſe they neither ſpecificate the Diſeaſe, neither can any reaſon of the Symptoms be rendered from them, neither do they perpetually beſiege ſome certain and determinate noble part. Some man perhaps, who hath reſpect to the exceſſive magnitude of the liver, may object that in this affect; that is perpetually obſtructed, and thereupon the ſanguification being vitiated, the other things are prepoſterouſly derived; but if this ſwelling of the Liver did alwayes proceed from the obſtruction of it, then a paleneſſe of complexion, a cachexia or indigeſtion, and by the advantage of time, the Dropſie it ſelf ſhould neceſſarily and perpetually accompany

pany this affect: Moreover, The Liver ſhould alwayes be ſeen to be vitiated in the colour, and at the diſſection hard tumors and knots ſhould be obſerved in the ſubſtance of it, eſpecially in an inveterate affect, and that which killed the Patient; but ſeeing theſe things do not frequently (much leſs perpetually) occur in dead bodies, the augmented bulk of it muſt rather be referred to the irregular nutrition: Moreover, we deny it not, but that we have obſerved by Anatomy in thoſe who have periſhed of this Diſeaſe, obſtructions, various tumors, and knotty excreſcencies in the Lungs; but we atteſt withall, That we have ſeen ſome Infants, yea Boys lightly affected with this evil, in whom there was no ſuſpition of vitiated Lungs, for there was no cough, no impediment of reſpiration, which neceſſarily is an individual companion of the obſtruction of the Lungs.

Thirdly, Becauſe a ſufficient reaſon of all the Symptoms proper to this Diſeaſe, may more clearly and eaſily be derived from other fountains, as we ſhall ſee anon.

And thus we have ſufficiently proved, That this affect in reſpect of the firſt Eſſence of it, conſiſts not in the Organical Conſtitution of the natural parts. The ſame arguments will more effectually convince (more might be produced, but we judge accumulations unneceſſary) That this evil is not radicated in the continuity of the natural parts, ſo that there needs no more words to prove it.

The fifth Concluſion. *This Diſeaſe is primarily rooted in the ſimilary Conſtitution of the natural parts*: And therefore in reſpect of the radical Eſſence thereof, it is a ſimilary Diſeaſe. And becauſe a ſimilary

Diſeaſe, as ſuch, is not perpetually Simple, but ſometimes variouſly compounded (namely a Diſtemper is either Simple or Compound, and this becomes ſuch, not only by the firſt qualities among themſelves, but perhaps by hidden qualities conjoyned together; or, which is more agreeable to our Conceptions, eſpecially in the preſent buſineſs, by a kind of ſure proportion and medification of the inherent Spirits) We judge this to be a Compound Diſeaſe, and we aſſert the *prime* and *radical* Eſſence thereof to conſiſt in a cold and moiſt Diſtemper, with a Defect and *ſtupefaction* of the inherent Spirits, concurring in the inherent conſtitution of the parts primarily affected. But before we proceed to an higher Explication of this Opinion, we will premiſe ſome Limitations of it.

The Firſt ſhall be this: *That in this Diſeaſe, ſome parts of the Body are Primarily, and others Secondarily affected*: And truly, to us the External parts ſeem ſooner to be affected than the Brain and Bowels, as we ſhall declare more at large when we come to ſpeak of the parts affected.

The Second is this; *That thoſe parts alone which are Primarily affected, do labor under a notable cold Diſtemper with penury and ſtupefaction of ſpirit*: For the Brain perhaps and the Bowels may be moderately hot, and ſufficiently abound with Spirits, by reaſon of the copious vital influx; and moiſture may exceed in them by reaſon of the affuſion of our overplentiful aliment: but the other External parts are alwaies affected with a cold and moiſt Diſtemper, & a benummedneſs of the natural Spirit, & c. Whereupon we aſſert, that in this Diſeaſe they are primarily affected, and that they alone are the ſeat of the firſt Eſſence of this Diſeaſe.

Be this the Third: *All the External parts, and those first affected, do not equally labor under a cold and moist Distemper, and with benummedness of Spirits, &c.* For the Ligaments, Tendons and Nerves, are in their own nature more cold, and less moist; the Muscles, fleshy parts are rather more moist, and less cold: the skinny parts usually retain a mediocrity, yet all the said parts recede more or less from the natural towards a cold and moist temper. And in like manner, although some of the said parts do require a greater plenty and activity of Spirits than others, yet all of them a just proportion, being observed to the plenty and activity respectively due to each of them, are defective and destitute of that just proportion.

CHAP. V.

The proposed Opinion is examined by Parts. First, That this Disease is a cold Distemper. An Objection, and the Answer thereunto; That it is moist: That it consisteth in the penury or paucity of the Spirit:. An Objection, with the Answer. Finally, That this Disease consisteth in the stupefaction of the Spirits.

NOw let us more nearly examine the Opinion proposed, and assert it by parts.

First, That the parts first affected do labor under a cold distemper may be proved. First, from the unequal and diminished nutrition of the said parts; for as the inborn heat when it is augmented to a just proportion, doth very much conduce to further the concoction of the Aliment; so if it be too remiss, it easily retardeth and lesseneth the same.

Secondly, The same distemper is proved from the slowness and unaptness to motion; and also from the aversation to exercise, and desire to rest. For as the activity and agility of the Body is attributed to the Heat, so the tardity and slothfulness of it is in great part ascribed to Cold, Namely, supposing (as before) that this slothfulness hath no dependance

pendance upon the fault of the animal influx.

Thirdly, It is further confirmed, because this Disease many times followeth other acute Diseases, whereby the end not seldom (after the Wast or Consumption of the Natural heat) in a cold distemper.

Besides, It also receiveth Chronical Diseases which extenuate the Body, and such as in any manner are prone to leave a cold distemper behind them as Pertinacious Obstructions, the Scurvy, Cachexy, &c.

Moreover, Because it succeedeth the importune suppression of Scabbedness, and Impetiginous effects, as we have often observed, when the Scabs have newly broken out again, and the Itch is revived, such Boys have been easily restored to health, because by that means the Natural heat is re-augmented in the outward Members.

Lastly, Because many times it happeneth after a continual use of cold, thick and vilcous aliment, after surfeiting and idleness, and the like evident causes, either diminishing or overwhelming the Natural heat.

Fourthly, It is yet more plainly evinced, because those helps which excite, augment and cherish the heat in the outward parts, as various agitations, rubbings and anointings of the Body, do contribute a large share to the advancement of this Cure. These things being all cast together into a heap, it is sufficiently conspicuous that a cold distemper of the Natural constitution of the parts first affected is contained in the primary essence of this Disease.

Object. But here we meet with a specious Objection, *That a little Feaver, especially a slow one, or such*

as is erratical and wandering, is frequently conjoyned with this affect, which at the ſame time ſeemeth abſolutely conſiſtent with a cool diſtemper. For all Feavers by all men are accounted to be a hot diſtemper which is diametrically oppoſite to the ſaid eſſence.

We Anſwer (that we may not here interpoſe any thing concerning the eſſence of a Feaver) we freely grant, for ſo much as concerns the preſent Queſtion, that a Feaver is a hot diſtemper; but this doth not chiefly conſiſt in the Natural conſtitution of the parts, but in the vital conſtitution, namely in the influent heat preternaturally affected. For a Feaver is not ſome private Diſeaſe, but univerſal, and is diffuſed from the Heart through the Arteries in and with the vital Spirit, be it either overheated, or otherwiſe vitiated. For this preternatural heat hath only a reſpect to that inherent, as a cauſe potent and able variouſly to alter it, yet indeed by degrees and little and little. For firſt the influent heat is manifeſtly an actual heat, but the heat of the natural conſtitution is only potential: wherefore we affirm, that a cold diſtemper in reſpect of a natural and potential heat may conſiſt with a hot diſtemper in reſpect of an actual and influent heat. For indeed an actual heat is not ſo directly averſe to a cold diſtemper, which is ſo called by reaſon of a defect of the potential heat, but it may (the cauſe perſevering) conſiſt for a good while with it. As for example, there is an actual heat in Simple Water, Barley Water, diverſe Juleps, and the like being made hot, although at the ſame time they are potentially cold. So that to be actually hot, and potentially hot differ not in the Degree, but in the Species, neither are they ſo directly contrary to one another, that one

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muſt preſently expel the other out of a ſubject.

Moreover, Secondly, The influent hot diſtemper doth not ſo much correct the inherent cold diſtemper, as by accident it augmenteth it, namely by a waſt and diſſipation of the Natural Spirits, wherein chiefly the natural and potential heat reſides: Juſt after the ſame manner as the actual heat introduced by the fire diminiſheth the potential heat of the Wine. Whereupon any kind of Feaver ſupervening upon this Diſeaſe, uſually brings more damage than advantage to the ſick.

Secondly, We affirm, a moiſt diſtemper to be lodged together in the parts firſt affected; this is manifeſt from the laxity and ſoftneſs of the ſaid parts: and this ſign likewiſe doth more ſtrongly confirm the ſame thing, becauſe the ſaid parts are extenuated, ſo that unleſs there were a redundancy of moiſture in them, a certain rigidity and roughneſs would aſſault the touch; again, a cold diſtemper doth very rarely continue long without a moiſt: and laſtly, things helpful and hurtful atteſt this truth, for drying things are helpful, and moiſtning things are hurtful.

Thirdly, we affirm, That in the parts firſt affected there is a penury of natural ſpirits. This is proved by the very ſame arguments which we produced to evince it to be a cold diſtemper.

For firſt the unequal and imminute nutrition of the parts firſt affected, doth not only argue a coldneſs of temper, but withall, a want of natural ſpirits, for otherwiſe this defect of nutrition might be eaſily corrected. For the cauſe of that coldneſs wherewith the defect of the ſpirit is conjoyned, or ſome peccant humor is not impacted, is eaſily caſhiered,

and ſooner then is wont in this Diſeaſe, as may be ſeen in the parts grown extream cold in the winter ſeaſon; for example ſake, in the handling of ſnow; the parts ſo extreamly cooled, provided that they be rightly handled, will return to their priſtine temperament in few hours: but wher there is a diſtemper with the matter of it, as a caſe conjoynd, or wher there is a defect of the inherent ſpirits, ſuch a diſtemper indeed is not ſo ſoon nor ſo eaſily removed. But in the preſent affect we cannot affirm, that a conjoyned or impacted matter of any note is (at the leaſt alwaiſe) cauſed in the parts firſt affected becauſe they are obſerved to be more withered, feeble, and extreamly extenuated, and ſeeing this affect is very different from *Cachexia* and the Virgins diſeaſe; in the which for the moſt part, it is not the want of Spirits, but the conjoyned matter that cheriſheth the cold diſtemper: wherefore we may rightly infer that the pertinacity of this evil doth chiefly depend upon the defect of the natural Spirits. Secondly, The ſame is proved after the ſame manner by the ſecond argument before alledged for the cold diſtemper, namely, from ſloth and averſneſs to exerciſe. For activity hath not only a dependance upon the temper, but chiefly upon the fulneſs of the Spirits; as may be ſeen in ſtrong and healthful men, who in winter time, and hardeſt froſt, are more prompt, and inclinable to violent exerciſes then in ſummer, when the inherent Spirits are wont to be ſomewhat diſſolved. Thirdly, Feavers, and long extenuating Diſeaſes, as they often introduce a cold diſtemper, ſo they evidently diminiſh and diſſipate the inherent Spirits. To theſe we add, that argument which is deduced from the conſtitution of the Parents, the Parents that are more ſtrong and luſty (experience witneſſeth it)

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and accuſtomed to labour, ſeldom bring forth children obnoxious to this Diſeaſe: on the contrary, ſuch as are weak, ſickly, idle, tender, delicate, very prone to immoderate, premature, or decrepite Venery, ſuch as are troubled with a *Gonorrhea*, &c. for the moſt part beget children ſubject to this affect: Namely, becauſe the Seminary principles are furniſhed only with a deficiency of Spirits. We ſhould now proceed to the fourth aſſertion, but muſt firſt remove a *Remora* that cometh in the way.

Object. For ſome may object, *That the natural cold diſtemper is ſubordinated to the want of Spirits, and not contra-diſtinguiſhed to it, as is here ſuppoſed. For the paucity of the Spirits ſeemeth to be the very cauſe of the cold diſtemper, and the natural heat be it more intenſe or more remiſs, ſeemeth reſpectively to follow the proportion of the natural Spirits, as being radicated in them as their firſt ſubject.*

We anſwer. Firſt, That the inherent heat is indeed firſt grounded and ſubjected in the inherent Spirits. Moreover, as the inward heat is divided into two parts, namely, the natural and the acquired heat; ſo the inward Spirit muſt be alſo conceived to be twofold, the primogenial or ſeminal derived from the Parents in the ſeed, and the acquired Spirit contracted from a perfect aſſimilation of the aliment: the former Spirit is the baſis of the engrafted natural heat, the later of the inward acquired heat; we mean, not that theſe heats and Spirits are in themſelves diſtinct in the ſpecies, but only in their origine and degree of perfection, which is ſufficient to inveſt them with a various appellation. For in nutrition the aſſimilation of the aliment proceedeth even to a ſpecifical identity, and not an individual, although ſometimes, alſo it attaineth not the degree of orginal

nal perfection. For which cauſe it ſeemed ſufficient to us to have named the implanted heat, and the implanted Spirit, without any higher diſtinction; and therefore we grant, that the implanted heat is firſt ſubjected and rooted in the Spirits, and that it is nothing elſe then a certain modification of the ſaid Spirits, whereby they being irradiated by the vital heat do delight to endeavor to diffuſe themſelves, and to enlarge their dominions, by attracting, retaining, aſſimilating the aliments like unto themſelves, by ſevering the excrements; and laſtly, by diſpoſing the things acquired in due places: we ſay, likewiſe that this endeavor (wherein we place the eſſence of heat) by reaſon that it is diffuſive doth ſomewhat diſſipate and waſt the implanted Spirits, which becauſe of this effect are vulgarly called by the name of radical moiſture continually devoured and conſumed by the heat. Thus far we grant the argument: But in the ſecond place we affirm that the implanted heat doth differ from the hot implanted temperament; for the implanted heat is only a part of the hot *implanted temperament*, for not only a Spirit, but ſulphur alſo and ſalt, or perhaps choler contribute their heat to the conſtitution of the whole hot implanted temperament, whereof the implanted heat is only a part. Wherefore it is falſly ſuggeſted in the propounded argument, that a plenty of Spirits is the ſole cauſe of a hot diſtemper, and a paucity of a cold diſtemper: for a pound of the fleſh of an infant containeth more implanted Spirits then a pound of a young mans fleſh: yet it is moſt evident, that the temperament of a young man is far more hot then that of an infant: a hot temperament cannot therefore depend upon the ſole plenty of the *Spirits*, nor a cold temperament upon a want of

Spirits.

Spirits. Moreover in many maladies a hot distemper is consistent with a paucity of Spirits; as in a *Hectick* of the third degree; in like manner of a cold distemper with a competent plenty of Spirits, as in the Green-Sickness,

We say thirdly, That a plenty or paucity of Spirits is not perpetually a sufficient cause to determine the temperament either hot or cold; as on the contrary, neither doth a hot nor a cold temperament certainly and necessarily demonstrate a plenty or paucity of Spirits, as is manifest from the instance given. So that the temperament is no sure sign of the quantity of the Spirits, nor the quantity of the Spirits a sure sign of the temperament; and therefore of purpose not without just cause, these things come to be considered and examined as contradistinct, if we will procure a certain and inconfused knowledge of them:

Fourthly we answer, That although it were granted, that the implanted heat is subjected in the implanted *Spirits*, yet notwithstanding that heat is not intended nor remitted according to the sole plenty, or paucity of *Spirits*: for the *Spirits* howsoever sufficiently copious, yet if they be too much fixed, torpid, and as it were frozen; they exhibit not any implanted heat worthy of consideration. As for example, the white of an egge swelleth with copious *Spirits*, yet are they so benummed, and the inward heat is thereupon so small, that it obtaineth not the formation of a chicken, unless it be first excited by incubation, or some such other heat: therefore we may lawfully conclude, that a consideration from the want of *Spirits* is sufficiently distinct from the consideration of a cold implanted temperament, although the objected argument doth seem to insinu-

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ate the contrary. Moreover, from this fourth article of our anſwer, there reſulteth a fourth aſſertion of the eſſence propounded, Namely,

That beſide the diſtemper and want of *Spirits*, a certain benummedneſs of them muſt be added as a diſtinct part alſo of the eſſence of the diſeaſe. This benummedneſs of the engraffed *Spirits* appeareth chiefly by the defective nutrition and averſation from exerciſe, which proceed not primarily (as we have proved above) from any defect of the influx of the brain. It is alſo manifeſt from hence, becauſe all thoſe things which drive out that ſtupefaction of the *Spirits*, although they do not altogether drive it away, yet they conduce very much to the cure of this diſeaſe; as exerciſes of any kind augmented by degrees, frictions, anointings, &c. and things inwardly taken, of a heating, cutting, purging, and gently opening quality. But that this benummedneſs is ſufficently diſtinct from the want of Spirits (beſides that which we have ſaid in the 3. article of our Anſwer is ſufficiently manifeſt from hence, becauſe an exceſſive excitation, contrary to a benummedneſs is often conjoyned with a penury of *Spirits*: as it commonly falleth out in a *Hectick* feaver, in diſſolving fluxes, and the like diſeaſes, in which howſoever there be a want of *Spirits*, yet no benummedneſs is conſociated; but on the contrary, that vehement excitation and propenſity to motion muſt be reſtrained.

On the contrary, copious *Spirits* may conſiſt with a benummedneſſe, as in Wheat or Meal. For although it may ſeem to have but little *Spirit*, becauſe the *Spirits* of it do yet lurk in their fixation and benummedneſs; yet indeed the *Spirits* do abound in it, and may be ſummoned out by a ſimple fermentation, and excited to a manifeſtation of their *activi-*

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ty: As ſtrong Beer made thereof doth plainly declare. In like manner juyce newly preſſed out of immature grapes, is very mild and pleaſant, containing in the mean time plenty of *Spirits*, which afterwards the due fermentation being finiſhed, reveal themſelves in generous Wine.

Let us conclude therefore, that the benummedneſs of the *Spirits* in this affect deſerveth a particular and diſtinct conſideration.

CHAP. VI.

Of the Part firſt affected in this Diſeaſe.

WE have already propounded the firſt Eſſence of this Diſeaſe, it remaineth now that we enquire after the firſt Subject in which that Eſſence is radicated.

The heart and the brain do here ſeem rightly to be excluded, for the reaſons before alledged, the repetition whereof for brevity ſake we ſhall omit.

The Liver and the Lungs are not as yet exempted from all ſuſpition of this fault, we will therefore examine theſe bowels apart, and firſt we demand,

Whether the Liver be the ſubject of the firſt eſſence of this Diſeaſe?

The principal Argument is for the Affirmative, becauſe this Diſeaſe may ſeem to proceed from a vitious ſanguification, the Shop and Work-houſe whereof (at leaſt in probability) the Liver is ſuppoſed to be, but that a vitiated ſanguification is the

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firſt origine of this diſeaſe ſeems to be made manifeſt by many ſigns. Firſt, becauſe this diſeaſe for the moſt part followeth after many other great diſeaſes, either acute or chronical, which in great meaſure have beforehand weakned the ſanguifical vertue of the Liver. Secondly, Becauſe this diſeaſe doth not only depend upon outward, but inward cauſes, namely, the vitious humors. And ſeeing the vitious humors are generated in and with the maſs of blood in the liver, the firſt eſſence of this affect ſeemeth to be referred hither. Thirdly, The Liver is perpetually obſerved to be bigger than ordinary in this affect; which manifeſtly witneſſeth the Liver to be affected. Fourthly, thoſe internal Medicines which have a faculty to purify the blood, are requiſite to the cure of this diſeaſe, and being exhibited, are found to be very profitable. Fifthly, The miſſion of blood from the veins of the ears (which is not the meaneſt help to vanquiſh this affect) doth more than ſufficiently argue ſome fault to be in the blood, which ſeemeth to be aſcribed to the conſtitution of the Liver, in as much as it doth ſanguificate. Theſe Arguments have ſo far prevailed upon ſome very famous Phyſitians, that thereupon they have attributed the firſt eſſence of this diſeaſe to the Liver alone.

But we conceive that theſe things may be ſufficiently anſwered, if we ſhall firſt grant what can be further, or what hath already been rightly ſaid concerning this matter, and then diſſolve thoſe things which are inferred by bad and invalid conſequence.

Firſt, Therefore we grant that the maſs of blood is vitiated in this affect, and that from thence is conveied a continual ſuppeditation to the diſeaſe.

We grant alſo for the preſent, that the Liver is the Officine of ſanguification: but we deny that every vitioſity of the blood doth depend upon the vitiated ſanguification, conſtitution of the Liver. For firſt, the blood may be corruped by unwholſom aliment, the Liver in the mean time remaining ſonnd; in like manner, if the firſt concoction in the ventricle by any cauſe whatſoever be rendred imperfect; yet it cannot be fully corrected by the ſecond concoction in the Liver be that bowel never ſo ſound. Beſides, although the generation of vitious blood ſhould be ſolely aſcribed to the Liver, yet the other parts ſhould neceſſarily concur to the conſervation of that which is generated, as the Kidneys, the Spleen, the Pancreas, the Womb, &c. yea, and it ſeemeth undeniable, that all the parts which the blood waſheth in his circulation, do variouſly alter it, whilſt according to the capacity of the ſubject they imprint their qualities in it: for they are natural agents, and act by neceſſity, and continually without any ſuſpenſion of their actions or intervenient pauſes, unleſs they be eſtrained by ſome predominant power: therefore if theſe be ill affected, they give a greater or leſs tincture of pollution to the blood which paſſes through them, as may be ſeen in a contagion, gotten by an external contract communicated to the inward parts. Moreover, ſometimes a great pollution from the other diſeaſed parts is inſinuated into the blood, the liver in the interim being ſafe, as hath been ſomtimes obſerved in opened bodies, that have periſhed by a Dropſie, in whom the Liver was found to be ſufficiently ſound and whole. Moreover, We grant that the faults of the Blood do frequently derive their beginning from the depravedneſs of their ſanguifical

guifical conſtitution of the Liver, & that that depraved conſtitution is an affect of the Liver. But we deny this to be the ſame Diſeaſe whereof we now treat, becauſe it differs from it in the whole Species. For that ſame depraved conſtitution of the Liver is alike common to men of full age, to Boys and Children; but this diſeaſe is ſolely apropriated to boys and infants. Again, We grant that a vicious conſtitution of the Liver may by generating a corrupt blood be a common cauſe, and foment the augmentation of this affect: but we deny that to be the Diſeaſe it ſelf, whereof we now ſpeak, or any part of the firſt eſſence thereof. For it is one thing to produce a common cauſe of a diſeaſe, and another thing to be of the firſt eſſence of a diſeaſe. We deny alſo that to be the continent cauſe of this diſeaſe, or to be a ſufficient cauſe of it ſelf alone, or to be alwaies a cauſe. For the vitious conſtitution of the Liver, of what kind ſoever you will ſuppoſe it, doth not produce this affect in thoſe that are come to ripeneſs of years, nor perhaps always in young boys: and this is our anſwer in general to the argument: we proceed now in a like method to the confirmation of it.

Firſt therefore, we grant that this affect doth often follow other Diſeaſes, be they either acute or chronical, but not ſo much becauſe they had hurt the ſanguifical conſtitution of the Liver, as becauſe they had left the outward parts cold and benummed, the ingrafted Spirits exhauſted. Although we may eaſily admit the vitiated liver to be able to foment the evil by reaſon of the depraved ſanguification.

Secondly, We grant that this affect doth not only depend upon outward cauſes, but alſo upon inward, namely the faults of the blood it ſelf; but

that

that all these faults have their beginning from the Liver, that we flatly deny for the Reasons before alledged,

Thirdly, We grant that the mole or substane of the Liver is augmented in this affect, but we deny that to be the first essence of the Disease, for the reasons above rehearsed, where we reject the organical vices from the primary essence of this evil. Yet we admit this and the like diseases in a secondary essence of this affect, as we shall see hereafter.

Fourthly, We grant that internal Medicines can both alter and purify the blood, but in the present Affect they conduce to the cure, in this regard principally, because they facilitate the distribution of the blood to the outward members, attennuating the thicker, and cutting the viscous parts thereof, and because they also do impregnate the blood with a copious and benign Spirit, whereupon it happens, that the implanted Spirits of the parts before languishing are cherished, augmented and excited. In the mean time, we acknowledge that general benefit which accrews to the whole body by the purging of the blood, by siedge, vomit, urine, or any other wayes of evacuation. Only this is it which we affirm, that the more specifical part of the cure is wrought by way of alteration with the medicines aforesaid, as we have intimated already.

Fifthly and lastly, We grant that the opening the veins in the ears doth somewhat attenuate the blood, and conduce to the renovation of it, as also to the distribution of it to the external parts, and the withdrawing of it from the internal parts oppressed with too much plenty, and in that respect very much to advance the cure: yet we deny that it can from thence be rightly inforred that the first Essence of the disease is radicated in the

Liver. And thus we ſuppoſe we have ſatisfied the reaſons brought for the confirmation of this opinion. We will now produce ſome arguments that ſeem to perſwade the contrary.

The firſt is this, The firſt Eſſence of a Diſeaſe doth Specificate the Diſeaſe. But the vitiated ſanguifical conſtitution (however it be conceived) doth not ſpecificate this Diſeaſe. For ſeeing that this Diſeaſe doth appertain to infants onely and children; it behooveth them who adhere to the contrary opinion, to deſign ſome certain way of the depraved ſanguifical Conſtitution of the Liver, which may be proper to the tender age alone, but no depravation of the ſanguifical Conſtitution of the Liver can be imagined, which is not alſo common to thoſe of ripe years. If therefore the firſt Eſſence of this Diſeaſe ſhould conſiſt in that, this Diſeaſe would at leaſt ſometimes be obſerved in thoſe of ripe years, which notwithſtanding hath never been hitherto obſerved.

Secondly, The ſubject of the firſt eſſence of a Diſeaſe is ſo long affected with that Eſſence, as the Diſeaſe continueth. For neither can the Diſeaſe Exiſt without its Eſſence, neither can that Eſſence wander from one part to another: If therefore the Liver be the ſubject of the firſt Eſſence of this Diſeaſe, then ſhould it be affected thorowout the whole progreſs of the Diſeaſe; which nevertheleſs doth not ſeem credible, ſeeing that the Livers of thoſe who have died of this Diſeaſe, and have been diſſected, have excepting the augmented bulk thereof, been ſeen inculpable in reſpect of the other conditions.

Thirdly, If the Liver be the ſubject of the firſt Eſſence of this Diſeaſe, neceſſary it is, that upon the dayly increaſe of the Diſeaſe that ſhould be more grievouſly and evidently afflicted, and before death certainly it ſhould be marked by ſome manifeſt ſigns. For ſeeing

that every Diſeaſe is contrary to the nature of that part it beſiegeth, and doth daily more and more damnify and empair it: And although the beginnings of Diſeaſes are many times obſcure, yet in proceſs of time (eſpecially if they continue till the laſt day of life) they imprint moſt evident marks in the parts primarily affected; ſo that it can ſcarce be avoided, but that upon the opening of the body, they will be apparent to the firſt ſight; although alſo when an enquiry is appointed into ſome Chronical Diſeaſe, by diſſection of the body that periſhed by it, the finding of it out be grown difficult by reaſon of ſome other intervenient Diſeaſes, or otherwiſe complicated: Yet the part firſt affected is ever obſerved to be grievouſly and manifeſtly hurt. Seeing therefore in thoſe whom this Diſeaſe hath deſtroyed, the Liver is oftentimes found, excepting the augmented bulk, or at leaſt not conſiderably hurt, it will be to infer, that that bowel is not the ſubject of the firſt Eſſence of this Diſeaſe.

Fourthly, If the liver were the ſubject of the firſt eſſence of this diſeaſe, it ſhould labour under a cold and moiſt diſtemper, and alſo under a penury and benummedneſſe of ſpirits, as is ſufficiently manifeſt from what hath already been ſpoken. But in this preſent affect the liver doth not always labor under a cold diſtemper, nor with a penury and ſtupifaction of ſpirits. For in this affect the vital blood being ſparingly diſtributed to the outward members, it muſt needs be ſuperabundantly powred upon the bowels, eſpecially the brain and the liver; and ſeeing this blood which is circulated thorow the bowels ſo near the heart, is made very hot and full of ſpirit: as even now iſſuing out of the fountain of the vital ſpirits, it is impoſſible that it ſhould permit a cold

diſtemper, or any defect of ſpirits to be in thoſe parts, which it watereth with ſo copious an afflux.

Fifthly, In this affect we often behold the face to be wel coloured, & the cheeks ruddy, which can ſcarce happen in a cold diſtemper of the liver, if it be of any continuance.

Sixthly, From a bad habit of breeding blood in the liver; a ſufficient reaſon cannot be rendred of the ſymptoms proper to this affect, a *Cacotrophy* indeed, or a vitious nouriſhment, and an *Atrophy*, or a defective nouriſhment, may many times, and peradventure not unjuſtly be aſcribed to the fault of the liver: but an *Alogotrophy*, or a diſproportional nouriſhment cannot immediately be referred to that bowel. For the liver maketh the blood equally and without difference for all the parts; neither is it liberal to one part in the diſpenſation of it, and reſerved to another. Moreover the debility of all the muſcles, the diſlike of exerciſe, the affectation of reſt, ſeemeth to have no correſpondence with the Liver, wherefore neither do we acknowledge the Liver to be the firſt ſeat of this diſeaſe.

Seventhly, This diſeaſe in ſtrong children is cured ſometimes only by exerciſe, play, ſtirring and rubbing of the body; by which means the heat is ſummoned to the outward parts, new ſpirits are raiſed up, the ſtupifaction of them is chaſed away, and the aliment is with a more plentiful benignity drawn to the outward members, which benefits without doubt are more properly accommodated to the outward parts then to the Liver.

And this queſtion being thus ſolved, we proceed to the other; namely,

Whether the Lungs be the ſubject of the firſt Eſſence of this diſeaſe.

The ſymptoms which ſeem to perſwade the affirmative, are the frequent narrowneſs of the breaſt, the difficulty

ficulty of breathing, an *asthma*, a cough, the inflammation of the Lungs, the hard swellings of the Lungs, the impostume in the Lungs and the Ptisick. First, The narrowness of the breast doth not presently arise from the very beginning of the disease, & therfore cannot be attested to be of the first Essence of this disease, in like manner the difficulty of breathing & the *asthma* do not perpetually accompany this affect, and therefore an indication of the part first affected cannot be borrowed from them. Thirdly, the cough is sometimes present, sometimes absent, and is often times variously intended and remitted, till the essence of the disease persisteth in the same state; which also happeneth from very many of the aforesaid symptoms. Fourthly, An inflammation of the Lungs doth not frequently molest the patient, and when it invadeth, him, it is an acute and not a chronical disease; as this whereof we now speak, so that we cannot lawfully conclude any certainty of the first affected part from a symptome so unusuall and so Fugitive. Fifthly, Hard swellings of the Lungs, little swellings, impostumes; yea, and bunches may precede, associate, and follow after this affect, but these diseases are altogether of a different kind from that we now speak of; yea, and are common as well to men of ripe years as to children and infants: moreover, the *Ptysick* doth not usually supervene unless after a long continuance of this affect, as being far from the first Essence of this Disease; and that it may manifestly appear to be very remote from the first esteem of it, so that can confer little or nothing to the finding out of the part affected. Moreover, those inseparable and vulgar symptoms of this Disease, as the impotency of the external parts to motion, and the inequality of nutrition, can by no reason be deduced from the affected Lungs: and therefore we cannot admit this

bowel for the first seat of this Disease. And thus at length we descend to point out the parts first affected.

The special marow issuing out of the Skull doth seem to deserve the first place: The second, all the Nerves produced by it; the third, all the membranous and fibrous parts unto which those Nerves are carried along. And in these parts we affirm the first essence of this disease to be rooted, neither do we think it needful to joyn other parts with these. For the softness, loosness, and *Atony* of the whole Spine without the Skull, of all the Nerves arising from thence, of all the Fibers of the Universal Body, and by that means an inability to motion, a slothfulness and affectation of rest, which bewray themselves from the very beginning of this affect, do abundantly evince these parts to be affected with coldness, defect and benummedness of Spirits; and from hence it comes to pass that they are extenuated and afflicted with an incompetency of nourishment. For they do somewhat communicate their benummedness to the tops of the Arteries, whereupon the Flux of blood that is distributed unto them, suffers diminution; and because they are cold, and labor under a defect of Spirits, they imperfectly concoct the affused blood, so that there is a necessity that they must be unduly nourished, and less than the other parts, and by consequence be extenuated. Therefore we justly and deservedly ascribe the first essence of this Disease to those parts alone.

Yet it may be here doubted whether the bones may not also be numbred among the parts first affected, seeing that certain tumors of the bones may be observed presently after the first invasion of the Disease in divers places, but especially in the appendancies of the Bones to the Wrists and tops of the Ribs, where they are conjoyned

joyned with the griſtles of the Stern?

We anſwer, That indeed it cannot be denied, but that the ſaid tumors of the bones, both in reſpect of the encreaſed greatneſs, and alſo by reaſon of the vitiated figure are really and truly Diſeaſes, and therefore we grant that the bones muſt be referred to the primary or ſecondary eſſence of the Diſeaſe: but that they do not pertain to the primary eſſence of the Diſeaſe is manifeſt from hence, Becauſe the ſaid tumors of the bones depend upon the firſt eſſence of this Diſeaſe, and ſuppoſe the pre-exiſtence of it. For they ſpring from the unequal nouriſhment of the parts which is a Symptome of the firſt eſſence of this Diſeaſe. But here the inequality of the nouriſhment can depend upon the firſt eſſence of this Diſeaſe, ſhall more fully be declared in its due place; namely, where the reaſon of the ſecondary eſſence is to be rendred. We will only here ſhew that thoſe ſwellings of the bones are rightly deduced from the improportionate nouriſhment, to wit, when in reſpect of the reſt it is too much augmented in the ſwelling parts. That is proved by this argument, Becauſe the protuberant part of the bones are altogether of the ſame Species with the other parts of the bones; whereupon it is neceſſary, that they come out by the ſame way of generation, by which the reſt are augmented and encreaſe. Therefore ſeeing that the other bones are augmented by nutrition, that is, by the intro-ſumed aliment, and the aſſimilation of it, certainly we muſt judge that theſe bones alſo acquire their augmentation by the like reaſon (although without reaſon, meaſure and proportion) You will ſay, That tumors are uſually generated not of an alimentory or good, but a corrupt and vitious juyce. True it is indeed, that this is for the moſt part true, but as true it is that it is onely for the moſt part true. For

ſome tumors ſwell from a legitimate and alimentary juyce, as caruncles or little pieces of fleſh, knobbed ſwellings, and perhaps ſome hard bunches, but even theſe ſwellings do alſo differ much from the preſent ſtanding out of the bones. For thoſe tumors which we uſe to call excreſcences, have ſomewhat in them without the habit of the part and in the whole kind beſide nature: but theſe tumors do not grow without the habit of the part, neither do they include or contain any other preternatural thing beſide the ſole magnitude diſproportionately encreaſed, and by that means the vitiated figure of the parts. For otherwiſe theſe ſwellings ſhould not be of the ſame Species with the reſt of the Bone, to which they are continued, but that is repugnant to the experience of the ſences.

If therefore it be granted that ſome tumors (even among thoſe which are altogether preternatural, and conſiſt without the habit of their body) are generated of alimentary juyces, certainly much leſs hard is it to be underſtood that theſe ſwellings of the bones are generated and formed of the legitimate matter of the bones, by the inherent nutritive faculty. And this is clearly confirmed by this, becauſe the bones according to their ſimilary nature are by no means legitimately produced by an illegitimate matter, that is, an indiſpoſed and diſagreeable matter to the other ſimilary bones. *Ex quolibet ligno non fit Mercurius*, Every natural agent diſpoſeth the matter before it can introduce the form. It is neceſſary alſo that the matter ſo diſpoſed be legitimate. Now the matter of the ſwelling bones is manifeſtly diſpoſed; for otherwiſe it could not actually receive the ſpecifical form of a bone. Moreover, that theſe tumors of the bones are generated by the nutritive faculty is likewiſe evident, becauſe in all our body there is

not

not any other ossifical vertue, besides that nutritive Faculty inherent in the bones themselves, because also these tumors are generated and augmented by the introsumed aliment, and assimilated by the bones themselves: although perhaps in respect of the whole Bone this reception of the aliment may be unequal, and a sufficient cause of error in the nutritive faculty, whereby one part of those Bones may be too sparingly nourished, and another part too plentifully even to a tumor.

CHAP. VII.

Of the Secondary Essence of this Disease.

THe first and Radical Essence of this Disease, and also the parts first affected being explained, now in the next place the Secondary Essence; namely, that which immediately followeth this Disease, offereth it self to our examination. And here we must refresh the memory by an intimation of that threefold Constitution already asserted, the Natural, the Vital, the Animal, and thorow these particular Constitutions, shall our examination proceed. And first we will consider the Naturall Constitution. This as we have taught above, consisteth in the *Temperament*, common qualities, the plenty and disposition of the Natural Spirits, in the Organization and continuity: now we have already proved, that the first Essence of this affect is radicated in the *Temperament*, and in the plenty and disposition of the Natural Spirits: but the other

parts

parts of this Conſtitution, to wit the common qualities, the Organization and the continuity do yet remain to be examined.

By *Common Qualities* we underſtand in a manner the ſame which ſome others have called the *Modos Materiæ*, and others, *Qualitates Secundas*. Now we call them *Common*, becauſe they are not reſtrained to any one Element or Form; but in ſome ſort may expiate and range thorow all the Bodies, and for the moſt part affect them more or leſs. Of this ſort are denſity, rarity, conſiſtence, fluidneſs, tenacity, friability, laxity, tenſion, (or rather tenſity, that the habit may be diſtinguiſhed from the action) witheredneſs, ſwelling and ſtifneſs, ſoftneſs, hardneſs, ſmoothneſs, roughneſs. But it is not our meaning, exactly to reckon up all and each of the *Common Qualities*, not to proſecute thoſe already rehearſed, further then the preſent occaſion ſhall require.

The *Tone* or *Harmony* of the Parts doth ſeem to reſult from ſome *Common Qualities* mutually embraced among themſelves. For the *Tone* of the Parts properly conſiſteth in a due tenor and mediocrity between certain oppoſite *Common Qualites*, as between thickneſs and thinneſs, &c. But if there be a receſs or departure from the juſt mediocrity to either of the extreams, then there is a neceſſity that the *Tone* muſt be vitiated. Two things therefore do here ſeem to be enquired after concerning the *Tone* of the Parts; the firſt, whether this Diſeaſe of the *Tone* of the Parts be in any degree vitiated. The next, Whether thoſe faults of the *Tone* do belong to the ſecondary Eſſence of the Diſeaſe.

As concerning the firſt, It will be unneceſſary to run thorow the particular Parts of the *Tone* ſeverally, it will be ſufficient to examine thoſe that ſeem guilty of the ſuſpected crime.

First,

First, Therefore we meet with an evident looſneſs of the *Tone* in this affect: But this looſneſs differeth both from the infirm coherence, and likewiſe from the *Paralytical* reſolution of the Parts: for the infirm coherence or weakned ſtifneſs of the part is eaſily made an occaſion of the looſneſs, becauſe in ſuch caſes the Part can ſcarce be ſtretched forth, but a part may at the ſame time be both looſe, and likewiſe ſufficiently ſtiff, as may be ſeen in the ſtrings of Inſtruments, which if you wind down the pins, they become looſe, although in the mean time they forgo not the tenancy of their ſubſtance. And in diſſected bodies we have frequently obſerved the looſe parts themſelves to be ſufficiently ſtiff; yea, and that ſometimes in this affect. Wherefore this looſneſs is a diſtinct quality from the vitiated ſtifneſs of a Part. Neither doth it leſs differ from that reſolution of the Parts which happeneth in the *Paralytical* Members. For the dead Palſy firſt conſiſteth in the depraved Animal Conſtitution: But this looſneſs is rooted in the Natural Conſtitution. For here is no Palſy preſent either in reſpect of motion, or in reſpect of the ſence of the Parts: Neither is the Brain in this Diſeaſe primarily affected, as we have already demonſtrated. Moreover, that there is ſuch an exceeding looſneſs of the Parts firſt affected in this Diſeaſe, is a thing ſo conſpicuous, that we judge it a ſuperfluous employment to offer proof thereof. For it is obvious to the very ſenſes, and therefore we have liſted it among the ſigns of the Diſeaſe. For whether it be a Part of the Eſſence or not a Part, if it be manifeſtly ſubjected to the Senſes, it acquireth the propriety of a ſign in reſpect of the other Par' of the Eſſence, which are removed from the Senſes.

Secondly, In this Diſeaſe there is not only a looſneſs, but likewiſe a witheredneſs and feebleneſs. Now this

quality

quality comprehendeth ſomewhat more then the meer and ſimple looſneſs; for it denoteth withall a certain emptineſs of the parts, whereby they ſink down of themſelves. Now ſuch an emptineſs, and ſuch a falling down of the parts firſt affected in this Diſeaſe are ſo obvious to the Senſes, that there is no need of further proof.

Thirdly, A ſoftneſs alſo may be named in the *Tone* of the Parts firſt affected in this Diſeaſe. For ſometimes it ſo falleth out that there is no co-incidence between the ſoftneſs and the aforeſaid qualities; but that it includeth or excludeth ſome other thing, as in a ſuppurated Tumor there is ſoftneſs, but without any laxity of the Tone, any emptineſs or ſubſidence. For in this preſent ſuppoſed caſe, the ſoftneſs chiefly dependeth upon the manner of Termination, and the tenancy of the part being vitiated. But in this affect there is for the moſt part a co-incidence with the laxity and flaccidity before mentioned: So that it is needleſs to diſtinguiſh it more accurately then by the name only.

Fourthly, There happeneth alſo another fault in the *Tone* of the parts firſt affected in this Diſeaſe, and this is an extream inward ſlipperineſs. Some perhaps may wonder what the meaning of theſe words may be, *Internal lubricity*. We confeſs indeed that for want of words we have been conſtrained to joyn this appellation. For when in nature ſuch a quality as hath a true exiſtence hath by the overſight of Philoſophers, and alſo the neglect of Grammarians wanted a name, we have taken ſo much liberty to our ſelvs, as in reſpect of the great vicinity which it hath with the ſuperficial lubricity of the body to give it the ſame Name, with the diſtinctive *Epithete* of Internal. In natural bodies therefore we acknowledge a twofold lubricity; one External and Superficial, which indeed conſiſteth in the ſmoothneſs and equality of the

Parts

Parts of the Superficies, by reaſon whereof the Subject of it doth eaſily ſlide by other bodies which it lighteth upon without much attrition and reſiſtance, Now contrary to this lubricity, is the Superficial roughneſs: but theſe two qualities have no reference to this place, becauſe they are Organical, neither do they any way belong to the *Tone* of the Parts. That other lubricity whereof we began to make mention, conſiſts in that internal, profound and ſimilary ſmoothneſs, and equality of the body. By reaſon whereof, the whole ſubſtance of its Subject doth eaſily ſlide by the other intro-ſubient bodies without much attrition and reſiſtance. And to this lubricity alſo there is an Internal roughneſs, Now that there is ſuch an internal ſimilary ſlipperineſs, and ſuch a roughneſs alſo oppoſite unto it may be ſhewed almoſt by innumerable inſtances. For almoſt all mucilaginous ſubſtances are ſlippery, and that not onely in reſpect of the outward Superficies, but alſo inwardly, and in reſpect of the univerſal Subſtance, and every particle thereof; ſo that, according to the definition of a ſimilary body, every particle by reaſon of this quality is made like unto the whole, and therefore this quality is internal and ſimilary, and diffuſed through the whole internal ſubſtance of the Subject. In like manner, ſuch an internal roughneſs may be obſerved in unripe fruits, extended thorow their whole ſubſtance and Internal fleſh. But when they have attained to a juſt ripeneſſe then uſually, in the room of that roughneſſe there ſucceedeth ſuch a ſlipperineſſe as we have now deſcribed. And here it muſt be obſerved, that if theſe bodies internally ſlippery be beſmeared or daubed upon the Superficies of bodies otherwiſe rough, they bequeath a certain degree of lubricity to them, for the time they adhere; in like manner being inwardly taken as the ſlip-

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pery juyces, and mucilages of *Althea*, *&c.* They do communicate a certain lubricity to the Internal paſſages of the Body; yea, and not only to the paſſages that relate to the inward cavities, but alſo more or leſs to very Similary ſubſtance of the parts of the Body, which alſo the blood waſheth being impregnated with that ſlippery juyce.

But this internal lubricity is manifold: oyly or fat, watriſh, ſpirituous, ſaltiſh, and perhaps earthy. The oyly is chiefly conſpicuous in the fat of Creatures, eſpecially ſuch as are young, and in many expreſſy Oyls, eſpecially the moiſter and colder, and alſo the temperate; as may be obſerved in the Oyls of Poppy-Seeds, Pippin-Seeds, the four greater Cold Seeds, Time-Seed and the Oyl of ſweet Almonds, and the like. A wateriſh lubricity is in ſome meaſure found in ſimple water it ſelf, although by reaſon of the fluidneſs it is leſs ſenſible; alſo this lubricity may moſt evidently be taken notice of in the mucilages, &c. The Spirituous perhaps doth never happen alone, but it is moſt frequently mixt with the wateriſh, as in the ſperm of almoſt all Creatures, and ripe fruits. The Saltiſh likewiſe is rarely ſimple, although there is a man that contendeth, it is to be found in ſalt of Tartar. But the compound ſaltiſh lubricity is frequently obvious, as in Soap and Salt of Tartar diſſolved with wateriſh and oyly ſubſtances. The Earthy (even mixt) is ſcarce worthy of obſervation, unleſs it be in reſpect that it concurreth to the thickning of fluid bodies, as in white clayiſh Mud, and Fullers Earth diſſolved. But in this place we have regard chiefly to that lubricity which is wateriſh, as being that alone which can be guilty of the crime in this affect we now handle.

And theſe things may ſuffice in general of the internal

nal or ſimilary lubricity, The next enquiring muſt be whether the firſt affected parts of this Diſeaſe be affected beyond a due proportion, with an internal or ſimilary lubricity. And at firſt indeed it ſeemeth very probable, that there is ſuch an extream lubricity in the ſaid parts, becauſe moiſture doth ſuperabound in them, which ever favoureth the ſaid lubricity, be it conjoyned either with heat or cold. Every one knowing that the Sperm of Creatures by how much it is moiſter than the creatures produced by it, by ſo much alſo it is the more ſlippery; in like manner that the young fleſh of Creatures is more ſlippery than that of old. Seeing therefore that humidity and lubricity of this kind are ſo inwardly converted: Seeing alſo that in the parts firſt affected there is manifeſtly an extream humidity, certainly it may eaſily be granted that a lubricity likewiſe doth too much abound in the ſaid parts. And to the production of this the benummedneſs of thoſe parts have no ſmall ſhare. For the Spirits when they are in their exaltation contract a kind of acrimony and ſharpneſs, as may be ſeen by comparing Muſt with old Wine, or with Spirit of Wine or with *Aqua vitæ*. For the Spirits of Muſt may truly be ſaid to be benummed or ſtupified, if they be compared with the Spirits of old Wine; and by how much more they are ſtupified, ſo much more lubricity they likewiſe contain, and alſo ſo much the leſs of ſharpneſs and acrimony. From whence it is manifeſt, that that benummedneſs and dulneſs in the Spirits lodging in the firſt affected parts, doth favor that extream lubricity; for that dulneſs of the Spirits in the ſaid parts is almoſt of the ſame degree with the dulneſs of the Spirits in Muſt. And becauſe the Spirits are defective in the parts firſt affected, it is evident, that this lubricity is an over-watriſh lubricity. Moreover, laxity, flaccidity

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and ſoftneſs do alſo ſeem to conſpire. For unripe fruit as they are hard, ſo till they wax ripe, they grow ſofter and ſofter, and withall acquire an internall lubricity; in like manner the parts are looſned by relaxant baths, and together they become more ſlippery; alſo ſlippery things taken inwardly, as the mucilage of *Althea*, &c. Do not onely looſen the Parts, but they alſo make the paſſages ſlippery, for which caſe in the pains of the ſtone they are drank with good juyces. Again, this lubricity of the firſt affected parts, ſeemeth to be much confirmed by this: becauſe in the diſſected Bodies a manifeſt lubricity is obſervable by the touch; and if they be ſqueezed, a mucilaginous kind of blood inwardly beſmearing them, is cruſhed out with the fingers. We ſay nothing of the skin, which for the moſt part is ſlippery in this affect, and is ſeldom felt to be rough to the touch: but it is worthy to be noted, that extream ſlippery Medicines either outwardly applyed, or inwardly taken, do uſually more hurt then good in this Diſeaſe, And thus we abſolve the former queſtion, of the manner whereby the *Tone* of the Parts is vitiated in this Affect. The other now preſents it ſelf to our conſideration.

Whether the Tone vitiated after that manner as hath been ſaid, be a Part of the Eſſence of this Diſeaſe?

We ſuppoſe here that whatſoever is found to be vitiated in the Body, is either a morbifical cauſe, or a Symptome, or the Diſeaſe it ſelf; and therefore this Diſeaſe either ſimple or compound, or any part of a compound, and that either primary or ſecondary.

We ſay firſt, That the vitiated *Tone* above propounded is not properly a cauſe of the Diſeaſe. And this ſcarce need any proof. For the ſaid *Tone* is a preternatural Conſtitution, rooted in the Parts themſelves, and by that reaſon it is moſt evidently diſtinguiſhed from a morbi-

morbifical cauſe properly ſo called. For although one Diſeaſe may be the cauſe of another, nevertheleſs even then it is not properly called a morbifical cauſe, but a primary Diſeaſe, and that other, which it produceth a ſecondary affect. But every where there is a growing together of them both into one total Diſeaſe, the former will be the primary Part of the Eſſence, and the later the ſecondary part of the Eſſence.

Secondly, We affirm, that the deſcribed *Tone* of the Parts is not a meer Symptome, for it is not under the things ſecured and retained, neither can it be comprehended under any depraved action, or any changed quality, not vitiating the action. But that the vitiated *Tone* is not comprehended under the things ſecured and retained, nor under any depraved action, may by the ſame labor be proved by this Reaſon, becauſe thoſe kind of Symptoms are not indeed Conſtitutions of the body; but the ſaid vitiated *Tone* without controverſy is a preternatural changed conſtitution, as we have already moſt plainly demonſtrated. Secondly, That the ſaid *Tone* vitiated after that manner, is not contained under any changed quality, nor depraving the action, is ſo clear and evident, that it needs no proof. For laxity and flaccidity hurteth the motion of the Parts, and an extream lubricity is an impediment to the due quickning of the vital Spirits, as ſhall hereafter be made manifeſt.

It may be Objected, *That ſome bare changed qualities which are comprehended under the Genus of Symptoms, may alſo vitiate an action: as the colour changed in the skin yieldeth an unpleaſant proſpect to the beholder, ſo that it begetteth deformity and defect of due comlineſs.*

We anſwer, That the changed colour of the Skin in as much as it vitiateth the beauty thereof (which is the proper action of the Skin) doth in rigor (in a large

acception) fall under the Notion of a Diſeaſe. But ſeeing this action of the Skin is only *Objective* and *Ad extra*, and ſeeing that altered colour doth hurt no Internal action of that individual: Phyſitians, who in the definition of a Diſeaſe, have reſpect only to the Internal actions of that individual, do uſually exclude it from the Claſſis of Diſeaſes. Or if the vitiated colour of a part do change in ſome place to deprave an internal action (which is known onely to happen in the Tunicle of the Eye, called *Cornea*) the beſt Phyſitians do ever reckon it for a Diſeaſe, although perhaps ſecondarily. But that we may retorn into the way from whence we have a little erred: ſeeing that the vitiated *Tone* may hurt, as we have ſaid, the internal actions, it doth not properly belong to that kind of Symptom, which is wont to be called by the name of a changed quality.

Thirdly we ſay, That this vitiated *Tone*, ſeeing it is neither a Morbifical cauſe, nor a Symptome, and yet is ſomething preternatural, muſt needs be the Diſeaſe it ſelf. Moreover, the ſame is clearly proved by the very definition of a Diſeaſe. For this vitiated *Tone* is a preternatural Conſtitution, primarily or immediately hurting the internal action; therefore it is a Diſeaſe. For to what the definition is competible, to that alſo the thing defined is competible. That it is a preternatural Conſtitution, is manifeſt by this, becauſe it is inherent in the ſolid parts of the body: that it likewiſe depraveth the Internal actions, is manifeſt from hence, becauſe an extream laxity, lubricity and flaccidity of the parts being granted, preſently the agility is weakned, no other cauſe approaching, and a certain ſluggiſhneſs deadeth the irritation of the vital Spirits. In agility, the matter is plain, ſeeing that firm and ſtretched bodies, other things being anſwerable are more active, and ſo on the contrary

trary: that the ſame thing alſo happeneth in the dulneſs of the irritation ſhall be ſhewed in its place, for the preſent we labor to prove no other thing then that the vitiated *Tone* in this affect is a Diſeaſe.

We ſay fourthly, That this vitiated *Tone* in this Diſeaſe is not any ſimple affect, having an exiſtence apart by it ſelf, but that it is ſo conjoyned and compounded in thoſe ſame parts with the primary Eſſence, that the whole Eſſence of the Diſeaſe (whereof we diſpute) may be ſaid to conſiſt of many Diſeaſes united together (in themſelves indeed ſimple, if they be conſidered aſunder) and therefore that the vitiated *Tone* is only a part of the whole Diſeaſe. And this needeth no other proof, then becauſe the firſt Eſſence propoſed above, and the ſaid vitiated *Tone* are both found in thoſe ſame parts. For that is properly called a compound Diſeaſe, which is produced by many ſimple Diſeaſes conjoyned in the ſame Part.

Fifthly, We affirm that the vitiated *Tone* is not only a part of the whole Eſſence, but ſuch a part as hath ſome dependance upon the primary Eſſence, and therefore that it is a ſecondary part of the Eſſence.

Before we proceed to the proof of this Propoſition, two grants or conceſſions are to be premiſed.

We grant firſt, That the ſaid *Tone* may be even immediately vitiated in other cauſes perhaps, and likewiſe by other cauſes, although that happen not in this preſent Diſeaſe. For the inherent *Tone* of the Parts may be primarily looſned in the Animal Conſtitution, and that ſuddenly, as may be obſerved in the *dead Palſy*. For the natural tenſity (and not the Animal only) of the *Paralytical* member is looſned, and indeed ſuddenly without any conſpicuous intervention of any part of the aforeſaid primary Eſſence. After the ſame manner in a *Lipothymy*

or defection of the mind, looſneſs and languiſhing ſuddenly attacheth all the parts. Now we cannot in either of theſe two cauſes refer the cauſe of the looſneſs to the cold and moiſt diſtemper of the natural Conſtitution, ſeeing that cannot be ſo ſuddenly and ſo ſenſibly changed. Which let them conſider (that we may give warning of it by the way) who will have theſe common qualities to be always ſecond and dependent upon the firſt alone: yea, on the other ſide let them in that cauſe obſerve how a cold and moiſt diſtemper doth afterwards by degrees follow that looſneſs ſuddenly introduced. Again, as for the flaccidity of the parts that may be immediately produced by large evacuations, as a flux of the belly, ſweatings, and the like immoderate vents, the temperament being not yet conſiderably changed, although we deny not but this may eaſily and doth uſually follow. Moreover an internal lubricity may be manifeſtly ſeparated from coldneſs, though very difficultly from moiſture.

Secondly, We grant that in the preſent Diſeaſe, the vitiated *Tone* doth not in any manner depend upon the firſt admitted Eſſence, nor that in every reſpect is ſubordinate unto it. For firſt the qualities of the *Tone* here vitiated, do alſo owe ſomewhat to common cauſes, namely to themſelves, and alſo to thoſe that are common to the firſt granted Eſſence. For extream moiſtening things by one and the ſame operation are apt to produce both too much moiſture, and alſo looſneſs. In like manner from violent evacuations, a want of Spirits, and withall a witheredneſs doth ariſe. Alſo from things too too ſlippery, either outwardly adminiſtred, or inwardly taken, or both, an internall lubricity is augmented, together with a moiſt diſtemper. For there is ſo great a connexion of the whole Eſſence, hitherto propounded

with

with the common cauſes, that there is ſcarce any thing which doth augment the firſt eſſence of the Diſeaſe, but at the ſame time more or leſs it hath an influence upon the vitiated *Tone*.

Theſe things being granted, We ſay nowithſtanding that in the preſent affect there is a very great dependance of the vitiated *Tone* upon the firſt Eſſence of this Diſeaſe; for which reſpect alone we have here referred the vitiated *Tone* to the ſecondary Eſſence. If any liſt to contend, *That the ſaid Tone in another reſpect may relate more clearly to the Secondary Eſſence*, becauſe he may imagine that the primary Eſſence of every Diſeaſe is neceſſarily ſimilary and perpetually grounded upon the firſt qualities alone; or becauſe he may conceive that the qualities wherein the *Tone* conſiſteth a e perpetually ſecondary, and that they follow the firſt only (as the ſhadow doth the Sun) that man may take notice that we purpoſely decline ſuch queſtions, leaſt we ſhould ſtraggle into an unwarrantable digreſſion.

It remaineth therefore only that we prove the Dependance of the vitiated *Tone* upon the firſt Eſſence of this Diſeaſe to be very great, and that we ſhall do by parts. We will begin at the laxity. We grant indeed that a laxity may be ſometimes ſuddenly produced, and in that cauſe a moiſt diſtemper may often follow upon it, Namely, when the laxity primarily dependeth upon the fault either of the Animal or Vital Conſtitution; but in this Diſeaſe, ſeeing that neither the Animal nor the Vital Conſtitution are primarily affected, there is a neceſſity that it muſt flow from other cauſes. Moreover, ſuch is the condition of laxity and tenſity, that they are obnoxious to ſudden alterations. For the ſtrings of a Lute may almoſt in a moment be ſtretched and looſned again; the ſame thing likewiſe from ſome cauſes befalleth the Fi-

bers of the Parts. But in this affect the laxity ſtealeth on by degrees and ſlowly; therefore neceſſary it is that it muſt begin, be ruled and moderated by ſome cauſe leiſurely and ſlowly augmented. Although therefore we granted even now, that the laxity doth own ſomewhat to the common cauſes of the Diſeaſes; yet the augmentation thereof is chiefly reſtrained and moderated by the primary Eſſence of this Diſeaſe. For moiſtning Medicines, although they looſen withall, yet they ſcarce looſen more than they moiſten, becauſe for the moſt part they looſen by moiſtning. Seeing therefore that the common cauſes of this Diſeaſe do flow into the Tone, chiefly by the Mediation of the firſt Eſſence of this Diſeaſe: And ſeeing that neither the Animal nor the Vital Conſtitution can here ſupply the vertue of a cauſe, we may lawfully infer that the laxity of the Tone doth chiefly depend upon the firſt Eſſence of the Diſeaſe. This is further confirmed, there is of it ſelf a certain proneſs and tendency of the Body to be through wet, ſo that the fibers of the parts muſt needs be looſned by it: Moreover, the defect of the Spirits and the ſtupifaction of them doth cauſe a remiſſion of the Tone by diminiſhing the vigor of the part. Therefore we may conclude that the Diſeaſe, laxity principally dependeth upon the primary Eſſence of the Diſeaſe. As for the flaccidity becauſe it comprehendeth the laxity, it ſpringeth from the ſame cauſes as that doth; but in as much as it includeth alſo a ſubſidence and a certain emptineſs, it evidently dependeth upon the defect and benummedneſs of the inherent Spirits; the plenty and vigor whereof being augmented, the lank and flagging member is eaſily rendred turgid and ſwelling. In the *interim*, we deny not but that that ſubſidence doth withal depend upon the extenuation and atrophy of the parts.

Laſtly,

Laſtly, How the ſlipperineſs doth proceed from theſe cauſes is ſufficiently manifeſted by what hath been ſaid above.

That we may at the length put a period to this matter, it may be obſerved for the higher confirmation of thoſe things already ſpoken that there is ſuch a ſtrict dependance between the Tone and the firſt granted Eſſence, that throughout the whole cure of the Diſeaſe they are intended and remitted together almoſt in equal pace. For at firſt the Children that are afflicted with this affect; do only go ſlowly and leiſurely whilſt the Tone of the parts is yet but a little looſned; but in the progreſs they ſcarce and with much ado truſt to their feet, then they play only ſitting, or as they are carried about. Afterwards they can ſcarce ſit upright; and at the laſt, when the Diſeaſe hath attained the higheſt exaltation, the feeble neck cannot without much difficulty ſupport the burden of the head; all which things as they atteſt the primary Eſſence of the Diſeaſe to be gradually augmented, ſo alſo they make it manifeſt that the vices of the Tone are intended by an equal pace. And ſo all theſe things being rightly weighed, we refer the vitiated Tone to the ſecondary, not the primary Eſſence of this affect, and by conſequence we conclude, indeed the thing that was in queſtion, that that depraved Tone is a ſecondary part of the eſſence of this Diſeaſe.

CHAP. VIII.

The Secondary Eſſence of this Diſeaſe in the Vital Conſtitution.

WE have already propounded that part of the Secondary Eſſence of this Diſeaſe which is radicated in the natural conſtitution, in as much as it comprehendeth the common qualities; it remaineth now that we examine the organical vices, and the faults of continuity, if any ſuch be found out. But ſeeing that no proper faults of continuity do occur in this affect, and ſeeing that the organical vices do depend partly upon the Eſſence above given, and partly upon the vital conſtitution being vitiated, it ſeems neceſſary in the next place to ſearch into thoſe faults of the vital conſtitution.

The vital conſtitution is aptly diſtinguiſhed into the original, or that which maketh an influx, and the participative or that which is produced by that influx.

The ſubject of the original vital conſtitution are the Spirits themſelves excited in the blood of the Arteries; You will ſay, *The heart rather ſeemeth to be the ſubject of this conſtitution.* But it is not ſo; for the heart it ſelf through the coronary Arteries receiveth the vital Spirits brought down with the Arterious blood from its left *Ventricle.* But it is abſurd to ſuppoſe the walls of the Heart to be the firſt ſubject of the vital heat, and in the mean time for thoſe to receive that heat from the Arteries. We muſt ſay therefore, that the ſolid ſubſtance

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of the heart is indeed the firſt and principal ſubject of his natural and inherent conſtitution; but ſeeing that receiveth the Vital Spirits (as hath been ſaid) it cannot be accounted the firſt ſubject of the Vital Conſtitution, which is imprinted in it by thoſe Spirits, and continueth no longer than the ſubſtance of the Heart is ſhedded and beſprinkled with the Vital Spirits. For neither can life ſubſiſt in any place without the Vital Spirit, Wherefore the ſubſtance of the Heart doth ſo far participate of the Vital conſtitution, as it is waſh'd and bedew'd with the Vital Spirits, and by Conſequence that Conſtitution in the ſubſtance of the heart is not original or influent, but participative or produced by that influx. This is alſo confirmed in that, becauſe the vital heat of the blood in the hollow Parts, or Ventricles of the Heart (which heat is at leaſt a part of the Vital Conſtitution) is far greater and more intenſive than that which is within the walls of the Heart, as any man may obſerve by the opening of the Bodies of living Creatures, the Ventricle of the Heart being wounded, and the Finger preſently thruſt in. For he ſhall feel a far more augmented heat in the blood, than in the very ſubſtance of the *Ventricle*, however it be handled. Moreover the vital Conſtitution is a thing tranſient and conſiſteth (as the Philoſophers Phraſe is) *in motu & fieri*; therefore it is rooted. In the moveable and decaying Spirits (ſuch as the Vitals which are contained in the Arterious Blood) for ſome Member being cut off, the Life vaniſheth almoſt in a moment, and by Conſequence the vital conſtitution: but the natural (as we have already ſinuated) continueth (though not in ſuch an exaltation as when the Vital remaineth) for a while after death. And indeed the Life and the Vital conſtitution is ſuddenly taken away in the caſe aforeſaid not by any poſitive

posite contrary Cause, But by a meer privation of the Conservant and Continent CAUSE; This is most evidently confirmed, because the Vital constitution is suddenly intended, remitted and altered in all the parts in respect of the model or measure of the Vital Constitution, excited in the *Ventricles* of the Heart; so in a *Lipothymy*, the heart fainting, the life of the parts presently vanisheth, at least languisheth; but assoon as the *Ventricles* of the heart are refreshed with Spirits by some proper cordial applications, straight way we behold the vital Constitution to be suddenly in some measure repaired in all the Parts. In the suppression of the breath sudden death followeth, the torrent of the vital Blood from the right to the left *Ventricle* being intercepted. In the opening of a Vein, or in any other immoderate profusion of Blood, there happeneth a swooning by the sole defect of the Vital Spirits. Therefore seeing the Vital constitution is transient and fugitive in any of the solid parts, and seeing it dependeth upon the proportion of the vital spirits flowing into them from the *Ventricle* of the heart, we may rightly infer, that in the solid parts it is not originall but participative. But in the Vital Spirits themselves, by whose function the Vital constitution is diffused and transmitted into all the Parts, it must necessarily be original. For there is no other original subject of it to be found in the Body.

Yet we grant, that the solid substance of the heart by his Natural Constitution (especially being watred by the Vital) is the assistant cause of the excitation of the Vital Spirits in the blood included in their *Ventricles*, although it cannot be the first subject of that same Vital Constitution, as we have even now abundantly proved. And these things for the present may suffice in general con-

concerning each vital constitution, the original and the participative, and to prove that that must properly be ascribed to the Vital Spirits, this to the solid Parts, as the immediate Subjects of the inherence. Three kinds of vices belonging to this Constitution do still await our examination: The two former whereof relate to the Original: And the third pertaineth to the participative Constitution. The first vice concerneth the Generation of the Vital Spirits. The second hath reference to the distribution of them: And the third appertaineth to the participation of the Vital Constitution. Of these we shall make enquiry in their order.

CHAP. IX.

The vitiated Generation of the Vital Spirits *in this Affect, and whether that fault be a Part of that Secondary Essence?*

THe *Vital Spirits* are first excited or generated within the Ventricles of the Heart; namely, in the very mass of the Blood, and properly they discriminate the Blood in the Arteries from that in the Veins, after that they are generated they are cherished and conserved within the cavities of the Arteries, uhtill they are distributed into the habit of the Parts. Yea, they are not only cherished in the Arteries, but in them also rightly disposed, perhaps some new ones are excited, though with less efficacy then in the heart.

This being Pre-admonished.

We say first, That in the very Substance of the heart there

there doth not occur any fault repugnant to the Generation of the *Vital Spirits*, which properly can be a part even of the ſecondary Eſſence of this Diſeaſe. For the heart it ſelf, for his part doth rightly perform his function in this Diſeaſe: and if any imperfection happen in the Generation of the *Vital Spirits*, it cannot be properly aſcribed to the heart, but to the ineptitude of the matter, to receive the form of the *Vital Spirits*. As the ingeſted aliment if it be extreamly crude, it may fruſtrate the perfection of a laudable concoction, the Stomach being otherwiſe ſound and faultleſs: So the unapt and unprofitable blood exported to the ventricles of the Heart, may render the action thereof imperfect, in reſpect of the operation and defect, how ſound ſoever it may be in it ſelf: In which caſe the aſcription of the fault is uſually and truly attributed to the indiſpoſed matter, and not to the Heart. You will reply, a Feaver is ſometimes complicated with this affect, and at ſuch time the heart doth unaptly Generate the *Vital Spirits*, But that Feaver is a Diſeaſe of a different kind, and by no means either the whole or any Part of the Eſſence of this affect.

Secondly, We affirm that the leſſer Arteries inſerted into the firſt affected Parts, are in ſome degree really cooled and benummed by them, through their adjacency and contact, and for that cauſe they do unaptly conſerve the *Vital Spirits* contained in them, whereupon the Vital Conſtitution of them is rendred ſomewhat imperfect before they can be effuſed into the Parts themſelves. And this fault of the little Arteries ſeemeth by very good right to be aſcribed to the Generation of the *vital Spirits*. For although it be not the function of the Arteries to propagate the *Vital Spirits* according to the firſt ſignification of the word; yet for this very reaſon, that

that they are obliged to conſerve them when they are propagated, namely, by ſuch a converſation as in a manner includeth a certain continuate *Generation* of them, their faults are rightly to be referred to the *Generation* of the *Vitals Spirits*. For the Vital Conſtitution is a certain tranſient action (as we have ſhewed before) which while it laſteth, is in a continual flux and motion, and which like a flame, when the continual fomentation and reparation of it is ſuſpended & ſuppreſſed, is ſuddenly extinguiſhed. Therefore are the *Arteries* as a continuate Heart to all the parts of the body, unto which they tranſmit and pour out their contained Spirits; and what faults ſoever of the Spirits happen before the effuſion of them into the habit of the Parts, ſeeing that they neceſſarily belong to the Original Vital Conſtitution, and cannot otherwiſe be aſcribed to the diſtribution of the Spirits, they muſt be referred to the very Generation of them; namely, a continuate Generation in the Arteries, whereby they are continually preſerved from a ſudden extinction.

Moreover, This fault of the Vital Spirits is the depravation of the Vital and Original Conſtitution, and ſeeing that it is ſomewhat preternatural, firſt hurting the action, from whence the participative conſtitution floweth in like manner depraved, and ſeeing that it meerly dependeth upon the primary Eſſence aforeſaid, and is complicated in the ſame parts, it will be a part of the ſecondary Eſſence of this Diſeaſe.

Thirdly, We ſay that the matter of the Vital Spirits, to wit the Blood of the Veins impregnated with his Natural ſpirits returning in his circulation from the firſt affected parts towards the Heart, is ſomewhat diſabled by them to admit the form of the Vital Spirit. For it is neceſſary that the Blood, whilſt it paſſeth through

through the parts affected with a cold diſtemper, wan and benummedneſs of inherent Spirits, muſt alſo thereupon be affected with ſome kind of frigidity, benummedneſs, and perhaps with a thickneſs and viſcous quality beyond the uſual degree of Nature. For as the blood doth give a tincture of his qualities to the parts thorow which it glideth; So on the contrary, the parts themſelves bequeath alſo as much as they can of their qualities to the flowing blood. But here likewiſe we muſt grant withall that this indiſpoſition in the parts firſt affected (eſpecially when it is light and ſmall) in the return to the inward parts, is very much corrected by their heat, before it ariſeth at the *Ventricles* of the heart, nay that it is ſometimes ſubdued, or if any ſuch contracted fault remain, it is commonly totally aboliſhed by the length of the journey, before the return of the Blood to the leſt *Ventricle* of the heart, whilſt it floweth down by the right, and the ſubſtance of the Lungs: the ſame thing alſo may be thus confirmed, becauſe if that indiſpoſition ſhould continue till the return of the blood to the left Ventricle of the Heart, the whole maſs of blood in the Arteries would become crude and imperfect; and ſeeing that this blood thus abounding with imperfect Vital Spirits ſhould be tranſmitted from the *Aorta* to all the Parts, it would more or leſs affect them all; which very rarely is obſerved in this Diſeaſe. For the head and many bowels, however ſome of them are found to be greater then ordinary, yet they ſeem to be watered with a perfect Vital Spirit. But although, as we have ſaid, the ſlight indiſpoſition of the Blood may be corrected, before its return to the right ventricle, yet when the contracted fault is great and more conſiderable, it cannot be altogether overcome, whereupon the Lungs in this Diſeaſe are commonly afflicted with the moſt grievous

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Evil. For, when the leſs Spirituous, and therefore the leſs paſſable Blood is continually tranſmitted thorow the Lungs cold, thick, or viſcous, in proceſs of time it muſt needs more or leſs infect and obſtruct the weaker parts of the Lungs; from whence proceed difficulty of drawing breath, a ſtubborn cough, hard tumors, inflammations, impoſthumes, and the *Ptyſick*. Feavers alſo, both *Erratick* and *Hectick*, may from hence derive their Origine. But ſeeing that fault may be ſuddenly introduced from the firſt affected parts, it is credible (although we have ſaid the Lungs are often infected by it) that it is for the moſt part overcome before the Blood can come to the left Ventricle. And this may be the reaſon why the Head and the adjacent parts do look ſo well and flouriſhing, namely, becauſe neither the Natural nor the Vital Conſtitution is hurt in them, ſeeing that the perfect Vital Spirits generated in the left Ventricle, and diſtributed from thence, do excite that freſh colour in the face; when on the contrary the Lungs do oftentimes labor under the faults, aforeſaid, the vitioufneſs of the Blood not being corrected before it enter the right Ventricle and the Arterious vein.

Moreover, This imperfect production of Vital Spirits in the right Ventricle of the Heart, by reaſon of the crudeneſs of the affluent Blood flowing in the Veins, totally appertaineth to the ſecondary Eſſence of this Diſeaſe, and muſt be accounted a part of it: for the Vital Conſtitution is vitiated, whereupon the actions in the Lungs are depraved, and it dependeth wholly and in every reſpect upon the primary granted eſſence, neither in the mean time doth it reſide in the ſolid Subſtance of the Heart, that it ſhould therefore deſerve the name of a new diſeaſe.

Here we note by the way, That Phyſitians in the cure

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of this affect do ever intermingle such things with their remedies as have respect to the benefit of the Lungs; and not without reason, seeing that it is apparent by what hath been said, to how much danger that Bowel is continually subject. And this may suffice concerning the faults in the Generation of the Vital Spirits: Now follow the faults of the distribution of those Spirits.

CHAP. X.

The vitiated Distribution of the Vital Spirits *in this Affect, and whether it be a Part of the Secondary Essence thereof?*

THis vitiated distribution seemeth to consist in three things: Namely, in the Diminution, Slowness, and the Inequality of it. The defective, and also the slow distribution of the Blood and Spirits, may be seen in some one Part, and perhaps in all those that are first affected: But the inequality cannot be observed in any one, seeing that it resulteth from a collation of a various swiftness and slowness, greatness and smallness of the torrent of the Blood in respect of the other parts. The defect and slowness of the distribution, seeing that they depend almost upon the same causes in the present affect, they may be handled together, and seeing those differences are more simple then the inequality, the handling of them seemeth deservedly and justly to be premised.

But first we must grant, that the passages and circula-

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tion of the Blood, thorow the first affected parts is not very difficult in this affect. For although a cold distemper, a want and benummedness of Spirits, do seem very difficultly to admit a transition of the Blood thorow the parts affected, with these qualities; yet indeed other conjoyned qualities; as moysture, loosness, laxity, flaccidity, softness, and internal lubricity, can at the least contribute as much power to facilitate the passage of it, as the qualities aforesaid can oppose to the interruption of it. Yea, if you value them by a just estimation, perhaps they can do more, but we will not in this place assert it, only we flatly deny the difficulty of the circulation to be greater. For, if we may compare hard bodies with soft, low bodies with straight, moist with dry, slippery with tough, we shall easily perceive that the circulation of the blood is much more quick and expedite in those, then in these. And this is manifest in young Creatures in whom those qualities abound, in such as are new born, although the Heart be very tender, the Arteries less firm, the pulsificative vertue, yet feeble and weak, yet the passing too and fro of the blood are readily and easily exercised; which in those that are older is not accomplished without a stronger pulse, and an indeavour or a kind of labor of the Heart and Arteries. Again, according to the opinion of *Golen* and *Hypocrates*, the Bodies of children are most passible; namely, by reason of their humidity, laxity, and softness. Besides, if we observe the formation of the chicken in the egg, the matter will be yet more plain. Within few dayes after the incubation the heart of the chicken is sensibly and evidently seen to beat, and to begin the circulation of the Blood: but if at the same time we consider the frailty of the Heart it self, and how weak a coherence there is between the parts of it, till in the interim it finisheth the circulation of the blood ac-

cording to the manner of it, such as it is : we must necessarily grant that in that shapeless lump, moisture, and internal lubricity do expedite and facilitate that motion. Some perhaps may object that in these cited cases the liberty and readiness of the circulation of the blood, depends not so much upon the moisture, softness and slipperiness, as upon the plenty of the inherent Natural Spirits. For in the *Cachexia*, Green sickness, and the dropsie, the flesh is very soft, moist, and perhaps slippery, when in the mean time the transition of the Blood is very difficult. We answer, those Bodies that wax tender and soft by a paucity of inherent Spirits, are less indisposed, and more apt to admit the circulation of the Blood then the other parts. But it is not simply true that such bodies which most abound with Spirits do perpetually obtain the most expedite and unrestrained circulation of the Blood : for the Blood is more easily circulated in Fish, then in Creatures of the Land, as is manifest by the tender and frail Constitution of their Heart, and Arteries ; yet they enjoy a less quantity of Inherent Spirits. But because they live perpetually in the waters, therefore is their flesh more moist and slippery. Whence it most evidently appeareth how effectual the inward lubricity and moisture are to facilitate the passage of the Blood. As for those that are invaded with the Green sickness or afflicted with a *Cachexia*, we grant indeed that the circulation of the Blood is difficult in them, yet not only through a defect of inherent Spirits, but by reason of stubborn obstructions lodging in the whole body. Wherefore it must be granted, notwithstanding the cold distemper, the penury, and stupifaction of the Spirits, which procure a difficulty to the circulation, that such a Mediocrity is imposed upon it, by the moisture, softness, and internal slipperiness, that the passage of the

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blood may be reduced to a juſt, if not an extream facility. But if the moiſture, ſoftneſs, and inward ſlipperineſs be ſo conſiderable to effectuate an eaſie circulation of the Blood, Truly, the diſtribution of it through the parts firſt affected ſeemeth to be expected more ſwift and not more ſlow. We anſwer that the facility of the tranſition of the Blood is oppoſed to the ſlowneſs of the motion, or to the ſmallneſs of the paſſage. For a ſwift motion may be ſlow, and in a ſmall Channel. But the facility is here oppoſed to difficulty, ſtriving, and labor, which in this caſe, if the circulation were difficult, ſhould happen to the Artery in the paſſage of the Blood. But that the Arteries do undergo ſome labour in expediting the circulation of the Blood into the firſt affected parts, ſhall anon be demonſtrated; we only affirm in this place that the facility, of the paſſage of the Blood doth not ſufficiently argue either the ſwiftneſs of the motion, nor the wideneſs of the paſſage. For, two cauſes do chiefly conſpire to haſten the courſe of the Blood through the habit of the parts. One is the aptitude of the part recipient, or that through which the blood ought to flow; and this cauſe is meerly paſſive and ſlothful: the other is the impulſion of the Heart and Artery, and alſo of the Arterious Blood contending to ſtretch and dilate it ſelf. This cauſe is active and full of vivacity. For upon the ceſſation of this impulſion, the diſtribution of the Blood will preſently after totally ceaſe, however the paſſage may be otherwiſe ſuppoſed to be moſt eaſie, manifeſt therefore it is that this impulſion is the principal and active cauſe of the ſwiftneſs and ſlowneſs, and alſo of the quantity of the diſtribution of the Blood. Wherefore thoſe cauſes which do any way advance or hinder this impulſion, do now come to undergo a more accurate examination.

For by these we shall know whether the distribution of the Blood in the parts first affected, be really more sparing or slow than is meet.

These causes do chiefly concur to excite that impulsion. First, the plenty and activity of the Vital spirits contained in the Blood. Secondly, the perfect soundness of the Heart. Thirdly, The firmitude, heat, and just magnitude of the Arteries. Fourthly, An irritation both of the Heart and Arteries, whether extrinsecally or intrinsecally caused. These we will run over in their order, that it may appear in what condition they are in this present Disease. First, As for the plenty and activity of the Vital Spirits, we have already shewed that in this affect the imperfect Vital Spirits are frequently excited in the right Ventricle of the Heart. Seeing therefore that the Blood tainted with these imperfect Spirits, must be driven into the Lungs, there is a necessity the distribution must there become more sparing and slow by reason of the defect of the Spirits. Again, seeing that the vital blood, as we have also shewed above, is somewhat cooled in the Arteries, which are terminated in the first affected parts, it is necessary likewise that the passage of it through the said parts must be diminished and more dull.

Secondly, The vertue of the Heart, unless peradventure by accident through the complication of some other Disease, is seldom seen to be vitiated in this affect.

Thirdly, For so much as concerneth the Arteries, we cannot accuse their condition of any notable detect in reference to their strength. But there is a manifest fault both in their heat and magnitude. First, in their heat, the Arteries inserted into the first affected parts, must necessarily by their cold distemper be somwhat affected with the like distemper. For seeing that a distemper

per of the parts first affected is active and permanent, it is unavoidable but they must more or less introduce a like quality into the parts so nearly bordering to one another, For natural agents are busily industrious to assimilate all Bodies placed within the Sphear of their activity, but especially such as are circum-ambient and neerly adjacent. But if any man doubt whether that coldness of the Arteries can retard and lessen the current of the Blood through the first affected parts, let him consider that frigidity is of it self an enemy to any kind of motion. For it is the quality of cold by its own Nature to arrest Violences, and impetuous oppositions, to condensate, to induce sloth, to superinduce *Somnolency*, stupifaction, and immobility, and when it attaineth a more intensive degree, to congeal and mortifie the parts. Therefore it must needs cast a *Remora* to the torrent of the Blood waving through the parts affected with that quality. Besides, in the opening of a Vein we have often observed upon the cooling of the member that the Blood hath flowed more slowly and sparingly, and if the member be warmed again, or the pulse be excited by rubbing or any other motion or means, that then the Blood floweth again with a more plentiful and liberal current. Moreover, the application of cold things is sensibly effectual to stop Blood preternaturally bursting out of any part, as on the contrary, hot things do provoke the ebullition of it.

It may be objected, *That the Pulse is many times actuated and intended by the cold outwardly oppused; as by the handling and playing withsnow, we see that not only the Pulse but the heat also is augmented in the hands of those that sport themselves with it.*

We answer, Cold things of themselves do alwayes move the passage of the Blood through the habit of the

parts; but that by accident they may intend the circulation of the Blood, if at length they provoke the pulſes of the Arteries (as in the ſaid caſe of the ſnow it happeneth) to beat ſtronger marches. But this never comes to paſs in this preſent affect. For (as we have already ſhewed) the circulation of the Blood in this Diſeaſe, however it may ſuffer *Imminution* or *Retardation*, yet it continueth ſufficien ly eaſie and expedite, neither doth any irritation of the pulſe ariſe from thence, as anon we ſhall perceive more plainly. For ſeeing it is manifeſt by what hath been ſaid, that the Arteries reaching to the firſt affected parts, become more cold then ordinary, or is meet, we may eaſily beleive that they become likewiſe more ſlender; ſo in any cooled member we ſee the Veins and the Arteries become more ſlender then they were wont to be; and it cannot be denyed, but that actual cold doth ſtraiglten the Veſſels. But it is more then probable that a Potential coldneſs (ſuch as perhaps that may be ſaid to be which is of an inward diſtemper) doth likewiſe make the Veins and Arteries more ſlender. So we ſee cold Complexions, and alſo cold and moiſt, to have leſs Veins and Arteries then the hot. Corpulent bodies, women, children, have narrower Veſſels, then lean men, or youths. Beſides, the very heat it ſelf is an expanſive quality, that it may enlarge the Veſſels, and cold a contractive quality, that it may reſtrain and ſtraiten the Veſſels. Finally, one of us obſerved that upon the diſſection of the Bodies perithing by this affect: He hath ſometimes found the Veins, and the Arteries, tending towards the firſt affected parts to be of an undue ſlenderneſs: but that thoſe Arteries called *Carotides*, and the *Iugulary* Veins were diſproportionately amplified; and it is credible that this might have been perpetually obſerved, had they that opened the bodies minded it with an

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attentive contemplation. But this we peremptorily affirm not, but leave it to future inquiry : in the interim seeing that it sufficiently appeareth by what hath been said that the circulation of the Blood, in the first affected parts is diminished, it is likewise agreeable to reason, that the Vessels also of those parts are straitned. And seeing that the left Ventricle of the Heart, doth pour so great a quantity into the *Aorta* as may suffice all the parts, and seeing that so many parts primarily affected do sparingly sip that blood, it is very probable that it is distributed with an unusual liberality thorow the other parts, and namely thorow the Head and Liver, and therefore the Vessels of these parts are somwhat dilated and amplified. Concerning the lessned circulation of the Blood in this affect: We add this experiment only, a ligature being wound about the arm or thighs of a young boy grievously tormented with this Disease, the Veins did not so easily swel beyond the ligature, neither did the habit of the part full of Blood appear in that place so swell'd and coloured as it usually doth in those that are sound. From whence apparent it is, that the transition of the Blood thorow those parts is more dull and less plentiful, then it ought to be, as a river stopped by a dam or wall doth sooner or later overflow the Banks, according to the various swiftness and magnitude of the Torrent : So likewise it happeneth here, the retiring of the Blood thorow the Vein to the inward parts, is intercepted by the force of the ligature, which if it were violent, would in a short time fill the Veins, and the habit of the parts beyond the ligature; as we see it to happen otherwise in sound Persons; but because in this Disease it filleth them slowly and very dully, we must conclude that the circulation of the Blood in those parts is extreamly lessened and slow, and that the Arteries inserted into those parts are more

cold and ſlender then they ought to be, as we have moſt abundantly proved, that the Arteries of the firſt affected parts are vitiated by a defect of juſt magnitude.

Fourthly, As for the irritation of the Heart and Arteries (which perhaps is the principle cauſe of many differences in the pulſes) it is manifeſtly found to be weak and ineffectual in the Arteries of the firſt affected parts. We purpoſe not at this time to diſcourſe of the nature, cauſes, differences and effects of irritation in the pulſes; only we obſerve in general that it may be either natural or violent; and that each of them may be univerſal or particular, and withal may ariſe either from within or from without. And laſtly, that it may be exceſſive or defective: In the handling of the preſent Diſeaſe it will ſuffice to touch upon the particular Irritation of the Arteries, and afterwards to accommodate our Diſeaſes to the preſent buſineſs. 1. Therefore, we affirm that the Arteries impel the Blood into the ſubſtance or habit of the parts, by a certain labour and contention; and that the parts which receive that Blood do make ſome reſiſtance and oppoſition: that by reaſon of this conflict the Arteries are Irritated to make ſtronger reſiſtances or pulſes; and that that Skirmiſhing is of ſo great moment to fortifie the pulſe and render it more vigorous, that when it is weak, the Pulſe can ſcarce be ſtrong: but where the contention is ſomewhat more increaſed, yet ſo, that it doth not overcome the oppoſition of the Arteries, the pulſe becomes more ſtrong and lively, provided that no impediment from ſome other cauſe doth intervene. This we might illuſtrate by divers inſtances, but we will exemplifie it only in a few: in the winter the pulſes are more full, hard, ſtrong and conſtant, then in the ſummer; but it is certain that at that time the outward parts of the body being bound up with cold, are more firm and leſs

paſſable, and therefore that they do more ſtrongly then at other times reſiſt the Blood, contending to paſs thorow the ſubſtance of them in his circulation; whereupon the Arteries, when no other intervening matter hindreth, muſt needs move more vigorouſly, and drive the Blood more forcibly, if they perform their office in perfecting the circulation of the Blood. Hereupon thoſe Arteries are irritated, unleſs they be totally ſuppreſt, or by ſome other means charmed, and by degrees yeild ſtronger ſtrokes; and withal the Spirituous Blood being pent in and ſtriving for more room they do wax a little more hot, and are ſomwhat enlarged, and ſomtimes having a little triumphed over the ſubdued oppoſition, they drive forward the blood into the parts, with a more ſwift and copious torrent then before. This is further confirmed by the heat augmented by handling ſnow, for although at the firſt the Hands wax preſently cold, yet in a ſhort time after they grow hot, and withal they are died and coloured with Blood, as the intenſiveneſs of the heat doth juſtifie. For upon the firſt contrectation or touch of the ſnow the parts are bound up, and ſtrongly reſiſt the circulation of the Blood, the Arteries alſo in thoſe parts are at the ſame time contracted. But, unleſs the cold prevail to a total ſuppreſſion of the Spirits contained in thoſe Arteries, and to a ſtupifying of the Arteries themſelves, or at leaſt a benummedneſs, thoſe Arteries are by degrees irritated, and the interrupted Blood more forcibly contends for wider room, and ſo at length by this counter-oppoſition, the Arteries wax hot and are dilated, and the pulſe being increaſed, they extrude the Blood more plentifully into the part before overcooled. On the contrary, in the ſummer, when leſs reſiſtance is oppoſed againſt the paſſage of the Blood, the pulſe becomes more feeble, more languid, and more ſoft. From whence it appears that

that the defect of a due irritation, proceeding from the weak reſiſtance of the parts which receive the Blood from the Arteries, doth diminiſh the vigor of the pulſes.

Secondly, The ſame is yet more evidently ſeen when the Pulſe is augmented by the motion of the Body; for in any violent motion almoſt all the Muſcles are ſtretched, by reaſon whereof they ſomewhat more reſiſt the paſſage of the Blood; hereupon the Arteries are provoked to contention, their heat is encreaſed, and therefore more nimble, ſtrong and full Pulſes are emitted.

Thirdly, As the inflamation of a part doth ſenſibly irritate the Arteries thereof, ſo it exciteth a more vehement Pulſe and cauſeth a more liberal Flux of the Blood. The ſame may be ſaid of pain.

Fourthly, Hither alſo muſt be referred the bruiſing of any part. For a bruiſed part doth difficultly receive the Blood flowing to it: hereupon the Arteries provoked, they beat more ſtrongly, and ſwell the bruiſed part reſiſting them into a tumor. This might be demonſtrated by many more examples, but we conceive theſe to be very ſufficient and ſatisfactory.

Moreover, It muſt be noted that the parts cauſed by the reception of the Blood in the Arteries, may be very great, and yet not ſufficient effectually to irritate the Arteries; in which caſe it rather remitteth and diſturbeth, then encreaſeth or facilitateth the force of the torrent of the Blood. For that oppoſition of it ſelf interrupteth the channel of the Blood thorow the ſubſtance of the parts; but becauſe it doth withal irritate the Arteries to emit more lively ſtrokes, it quickneth the torrent of it by accident. Wherefore we are here compelled into another involuntary digreſſion, by diſtinguiſhing

guiſhing between the reſiſtance of the part that irritates & that which doth not, or doth very little irritate the inſtances already alledged will ſuffice for the former, and to explain the later we will add a few.

Firſt, Therefore there is a reſiſtance that totally ſuppreſſeth the torrent of the Blood. Such a one is cauſed by a ſtrong ligature, which doth altogether intercept the pulſe in thoſe parts beyond it, neither yet doth it irritate the Arteries on this ſide of it, becauſe it overcometh all the force of the Artery beyond the Ligature and doth wholly break off the action thereof. The ſame is ſeen in the parts mortified with cold, or by other cauſes corrupted with an inflammation; and perhaps in ſome hard ſwellings, contractures and ſome confirmed wounds.

Secondly, There is a reſiſtance preſſing down the Arteries even by the compreſſion of the Arteries, and this happeneth in a ligature indifferently bound. Alſo in the compreſſion of an Artery by ſome tumor in the adjacent parts as in a raw ſwelling; alſo in a compreſſion from any outward cauſe, many things which belong to the lying down, on the right ſide eſpecially, and the left are referred hither; ſo in tumors on the right ſide, the lying on the left ſide is many times endured with the leaſt patience by the compreſſion of the ſound parts by thoſe that are ſwelled, &c. and this compreſſion however it reſiſteth the circulation of the blood, yet it doth not ſeem much to irritate the Arteries, becauſe it doth no leſs intercept the very pulſificative force, then it diminiſheth the action thereof. Although perhaps it may ſometimes irritate in the Lungs by reaſon of their vehement heat, juſt as it uſeth to do in aking and inflamed parts.

Thirdly, There is a reſiſtance in part repreſſing the circulation

circulation of the Blood, but without compreſſion of the Arteries, nor yet totally ſuppreſſing them, nor very much irritating the Artery. Such an one occurreth in obſtructions cauſed by cold, ſlow, thick, and moiſt humors, which although they may ſomwhat retard the free paſſage of the Blood, yet they provoke the Artery very little, becauſe at the ſame time they ſuperinduce a certain benummedneſs in them, at leaſt a cold diſtemper, as alſo in the Blood which they contain. The ſame almoſt may be ſaid of paralytical members, but that in theſe a benummedneſs is more evidently introduced in their Arteries, and the channel of the Blood is leſs retarded in them.

Moreover, We affirm ſecondly that the parts firſt affected in this Diſeaſe do not ſufficiently irritate the Arteries, by which the Blood is diſtributed through them. For although in theſe parts, both by reaſon of their ſolidity, and alſo in reſpect of their coldneſs we grant ſome kind of reſiſtance, yet it is extream feeble and ſlow, and very little provoking. Firſt, becauſe in thoſe parts a moiſt is conjoyned with the cold diſtemper, which of it ſelf tempereth and qualifieth all manner of provocations. Secondly, becauſe there is a penury of inherent Spirits, which otherwiſe, where they abound, are wont to cheriſh the vigor of the Arteries, and the blood contained in them. Thirdly, Becauſe thoſe parts are looſe, weak, and ſoft, and therefore more prone to receive with facility that which the Arteries ſend in, than to exaſperate them by reſiſtance. And that the Arteries do not convey the Blood by any vigorous and conſiderable force into theſe parts, is manifeſt by this ſign, becauſe after the influx of the Spirits, and the Blood, they ſtill continue looſe, ſoft and feeble, when on the contrary ſtrong Pulſes are wont to render

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the parts otherwiſe weak, full, ſwoln, and ſtiff, on a ſudden. Fifthly, becauſe the firſt affected parts have in them a ſimilary lubricity. For as the ſuperficiary or external lubricity ſuffereth any thing to paſs by, without attrition: ſo alſo the Internal or ſimilary lubricity facilitates the circulation of the Blood, ſo that the paſſage is accompliſhed with very ſmal oppoſition. We conclude therefore that the pro-irritation of the Arteries is in this Diſeaſe deficient; and therefore that the Arteries are very dully and ineffectually excited to ſtrengthen the pulſe.

Having at the length weighed all things which we propounded concerning the cauſes which actuate and advance the Blood in his circulation, it ſufficiently appeareth, that the circulation of the Blood in this affect is eaſie and expedit enough, but that it is leſſened and paſſeth dully thorow the parts firſt affected, both by reaſon of the ſluggiſhneſs of the Arterious Blood contained in the Artery of the ſaid parts, and alſo becauſe of the defective heat, and ſlenderneſs of thoſe Arteries; and finally, in regard of their ineffectual irritation. And let theſe things ſuffice concerning the two former faults belonging to the diſtribution of the Blood in this affect, namely, the diminution and ſlowneſs thereof. It remaineth in the next place to examine the inequality of that diſtribution.

CHAP.

CHAP. XI.

The Inequality of the Distribution of the Blood in this Affect.

THis inequality is to be estimated by a comparison of the greatness and swiftness of the current of the blood, made in divers parts. For if the circulation of the blood according to a Geometrical proportion be either equally small and slow, or equally great and swift, that must be judged equal by the scope of the present enquiries: on the contrary, if in some parts it be little and slow, and in others great and swift, that must be reputed unequal and disproportionate. And this is the State of the present disquisition.

It is manifest by what hath been said, That the distribution of the blood thorow the parts first affected, is extreamly sparing and slow: It remaineth therefore only that we consider whether it be transmitted thorow the other parts with a quicker and more plentiful motion.

We have already affirmed that the root of this evil is not fixed in the Heart it self, and that this Bowel of it self is not primarily ill affected in respect of the left Ventricle thereof. It is credible therefore, that the Heart (unless perhaps some other Disease be conjoyned or supervene) doth rightly execute his function, and expel a sufficient quantity of Blood, for our turn by every stroke into the *Aorta*. Seeing therefore (as hath been already

ready proved) that the blood is niggardly dispensed from the *Aorta* into the first affected parts, a superfluous portion of it must needs be distributed into other parts not so affected: for otherwise the *Aorta* should not sufficiently discharge it self, nor disburthen the Blood received from the Heart, but it would be obstructed and oppressed with the plenty thereof; and this repletion upon every slight occasion would fly back, even to the left Ventricle of the Heart, and there kindle a Feaver. And we grant indeed, for this very cause, among others, that in this Disease a Feaver is easily and frequently produced. But seeing that the Feaver is another Disease conjoyned, and separable and different from this, and seeing that this Disease very often happeneth without a Feaver; it must needs be granted, that by how much more sparingly the Blood is distributed to the first affected parts, by so much the more is it plentifully conveyed to the other parts, at least in the absence of the Feaver. For seeing that quantity of Blood, as we said even now, is extruded into the *Aorta*, as may suffice the whole Body, and seeing all of it must be distributed into several parts, it most plainly follows, that the less is transmitted into one part, the more is dispensed into another. And thus it may be perceived that the inequality of the distribution of the Blood is inferred from the sole diminution thereof, in the first affected parts above asserted, (at least probably) namely, from the small and slow current of the Blood thorow the parts first affected, there may be rightly collected a more quick and plentiful stream of it, into the inward parts not so affected. Now let us see whether the other appearances relating hither are correspondent to this Discourse.

First, It seemeth manifest by what hath been alledged, that the Head, the Brain, the Liver, and the other Bowels, are not afflicted with that cold distemper, nor

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that ſtupifaction and penury of inherent Spirits, where-with the parts primarily affected are oppreſt. For the bowels and the ſaid parts do not receive their Nerves from the Spinal Marrow, without the Skul, but they are involved in the ſame condition with the other parts. Moreover, thoſe parts, as far as we can judg by the touch are (at leaſt outwardly) moderately hot, and as far as we can gueſs by the ſight they retain their native and floriſhing colour, beſides they are more full and fleſhy, than the firſt affected parts.

Moreover, Children afflicted with this Diſeaſe have an indifferently good appetite, they do not ill concoct the intro-ſumed aliment; and about the Head they retain their ſenſes very acute: they ſee, they hear, they taſt, they ſmel as ſubtily as others, and as for their wit, they many times ſurpaſs thoſe of equal years with them; unleſs an impediment from ſome other cauſe. All which things put together do abundantly witneſs, that a cold diſtemper, nor a benummedneſs or penury of Inherent Spirits, hath none, or at leaſt a very ſmall predominancy in thoſe parts. Theſe things being granted, we muſt likewiſe needs grant that a more liberal diſtribution of the Blood is diſpenſed to the ſaid parts. For as for the heat, we have already ſhewed that that doth both amplify and ſtir up the Arteries to ſend forth a ſtronger pulſation; and we have alſo noted above that the plenty of the Spirits, doth not only cheriſh the pulſificative force of the Arteries, and conſerve the vigor of the Blood contained in them, but that it doth ſomewhat enliven and excitate both of them, and that by ſo much the more effectually, by how much the leſs the inherent Spirits are affected with a ſtupifaction.

Secondly, unleſs thoſe parts were watered with a more liberal circulation of the Blood, they would become more

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ſoft, looſe and feeble, then they are even as the parts firſt affected are obſerved to be: For upon the defect or languiſhing of the Pulſe in any part, the part preſently becomes looſe and weak, as it happeneth to all the Parts in a *Lipothymy*. On the contrary, when the Pulſe beats ſtrongly, the Part whereunto it belongeth, is ſeen to be ſomwhat rigid and ſwelled. For a full Pulſe doth preſently fill up thoſe parts which were before ſunk down by emptineſs; as the *Lypothymy* being driven away, and the Pulſe being reſtored, the Parts of the Body, which were before looſe and languid, are not only well coloured, but full of vivacity and turgid: ſeeing therefore that thoſe Parts are not affected with that ſoftneſs; looſneſs and weakneſs, we muſt conclude that they are actuated with a full Pulſe.

Thirdly, The very argumented magnitude of theſe parts, in compariſon of the parts primarily affected in this Diſeaſe, doth witneſs, that they are more liberally fed with their aliment, namely, the Blood (which is reputed the common and laſt aliment of the Parts) for otherwiſe ſcarce any ſufficient reaſon can be imagined, why, when the firſt affected Parts are ſo extenuated, they ſhould be (eſpecially the Brain and Liver) in ſo good a condition, ſo full and ſo plump. The ſame thing is confirmed by the lively colour of the ſame parts. For if the Pulſe languiſh in any part, ſomewhat of the freſh and amiable colour preſently retireth from that Part.

Fourthly, The Arteries called *Carotides*, and the Jugulary Vein, which belong to the Brain, and the parts about the Head are obſerved to be very broad in this affect; but the Veſſels tending to the firſt affected parts to be unduly ſlender; from whence we may clearly infer, That the diſpenſation of the Blood to thoſe Parts is unequal. And here we intreat and beſeech thoſe who have

an opportunity to open ſuch Bodies as this affect hath deſtroyed, that they would accurately contemplate whether the ſwelling Arteries inſerted into the ſwelling parts of the Bones do more liberally, and more commodiouſly tranſmit the Blood into thoſe, than into the other leſs nouriſhed parts of the Bones, and whether the Arteries of thoſe parts are more broad than of theſe. Although indeed we confeſs that this enquiry is moſt difficult, both becauſe of the ſlenderneſs of thoſe Arteries, and in regard of the obſcurity of their inſertion, and alſo in reſpect of the hardneſs of the Bones.

Fifthly, Hither alſo belong things hurtful and helpful, for children afflicted with this Diſeaſe are manifeſtly benefitted by rubbings, motion, and various agitation of the Body, by exerciſes, ſtrengthning Oyntments, and the like means which raiſe the heat in the Members on the right ſide, and the other parts primarily affected, and irritate the Pulſes, and augment them after any ſort, whereby the diſtribution of the Blood may be more nearly reduced to ſome equality; with the contrary things they are damnified. In like manner ſuch Medicines which promove the diſpenſation of the Blood to the firſt affected parts (as thoſe which are moderately hot, benign and familiar to Nature, and ſo attenuant, incident, and de-obſtruent that at the ſame time they do not in the leaſt degree waſt, but cheriſh and augment the Spirits) help very much towards the cure of this Diſeaſe; the contraries do either produce or foment it being produced. All theſe things being conſidered, we muſt conclude that the diſtribution of the Blood in this affect is irregular and unequal. And thus at length we have finiſhed the diſquiſition of the faults in the deſtribution of the Vital Blood; we now proceed to the

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examination of the faults, if any ſuch there be, of the Vital participative Conſtitution in this Diſeaſe.

CHAP. XII.

The faults of the Vital participative Conſtitution in this Affect.

WE have already ſaid that the Origine of the Viral Conſtitution is grounded in the Arterious Blood, and eſpecially in the ſpirituous part thereof: but becauſe the ſolid parts alſo do ſomewhat truly participate the nature of Life, we juſtly aſcribe unto them the Vital participative Conſtitution.

Now this Conſtitution conſiſteth in Three Things

Firſt, In a certain union of the Arterious Blood with the ſubſtance of the ſolid parts through which it paſſeth.

Secondly, In the Vitall heat excited in thoſe parts.

Thirdly, In the enlivening and exaltation of the Natural Conſtitution, and of all the Natural faculties of thoſe parts.

Firſt, As for that union of the Arterious Blood, it muſt be juſtly reputed the firſt part of the participative Life. For the ſolid parts are therefore ſaid to participate of the Nature of Life, or the Vital Conſtitution, becauſe the Vital Spirits are contained in them. For

Life cannot consist without a Vital Spirit. Therefore when the Vital Spirit is distributed in and with the Arterious Blood to the solid parts through the Arteries, and these parts do suck in that Blood into their substance, it comes to pass, that the said parts are co-united with the Vital Spirits, and so they participate of the Nature of Life.

Moreover, Seeing this union is not permanent but transient, and consisteth in motion, it seemeth to consist in the confluence and mutual embracement of the inherent natural and influent Vital Spirit: but the conditions which are requisite to make this a natural concourse, are,

First, That it be in all respects moderate, and not impetuous.

Secondly, That it be in all respects strong, and not feeble and stupified.

Thirdly, That it be friendly and peaceable, not hostile and Turbulent; that it be gentle, not tumultuous; that it be neither too slippery and smooth, nor too rough.

Fourthly, That it end not in any kind of dissipation of the Spirits, but rather in the appeasing and apt disposition of them for their return into the Veins. More such conditions might perhaps be added; but because they very little belong to this Disease, we shall here supercede any further examination of them. We only note, that the mutual concourse and union of the Vital and natural Constitution by their Spirits, doth not occur in this affect, with that activity, vigor and complacency, as it usually doth in sound Bodies. And this scarce needeth any proof, seeing that it is manifest by what hath been said above, that not only the natural constitution of the first affected Parts doth labor under a

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cold and moiſt diſtemper, a defect and benummedneſs of Spirits, but that the Vital Blood it ſelf is alſo ſomewhat damped and ſtupified in the tops or ends of the Arteries, before it can be conveighed into the firſt affected parts, ſo that that union muſt needs be performed without either a ſufficient vivacity or pleaſure. For when the vigorous Vital Spirits do meet together with the Natural Spirits no leſs vigorous, they are united with a kind of curteous ſtrife and delightful contention. Whether, that we may illuſtrate this matter by an example, the natural Spirits as a Bride do here allure, and in a manner repel the Vital Spirits who as it were act the part of a Bridegroom: But the Vital Spirits provoked with their heat, and driven on by the vigor of the Pulſes do more confidently invade the Natural Spirits, and penetrate into their confines and regions, whilſt the Natural Spirits in the mean time (however as it were with modeſt reſiſtances repulſing the aſſault) receive them at length not without a certain pleaſure. For the very corporal pleaſure is eſtabliſhed upon, and encreaſed by a kind of amorous ſtrife, and the principal part of Life it ſelf conſiſteth in ſuch a contention about the *Recipocal* union of the Spirits; for to that end the Vital Spirits are both generated and diſtributed, that at length they may paſs through the ſolid Natural Conſtitution of the Parts, and may profoundly imbue them with their vital power and vertue; but ſeeing this peneration cannot be effected without endeavor and reſiſtance, it muſt needs be, that the vigor of that contention and reſiſtance, be either more or leſs according to their copiouſneſs, vivacity and heat of thoſe Spirits that maintain the conflict. Therefore becauſe in this affect, both the Naturall and the Vitall Spirits are more cold, fewer, and leſs active; their

concourſe and union muſt needs be dull and undelightful. Moreover, it muſt be noted in this affect (which alſo we have ſhewed above) that the permeation of the Blood thorow the firſt affected parts is ſo eaſie and ſlippery, whereupon even for this reaſon, that concourſe and union of the Spirits in thoſe parts is rendred more ſlothful, and leſs pleaſant. Beſides hot exhalations, although for the moſt part they are ſparingly raiſed in this affect, yet being raiſed, by reaſon of the ſoftneſs, looſneſs, and internal lubricity of the firſt affected parts, they evaporate ſooner then is meet, whereupon they leave thoſe parts cold and feeble.

Secondly, As for the Vital heat communicated to the ſolid parts (which is the ſecond part of the Vital participative Conſtitution) that partly depends upon the aforeſaid union, or the Incorporation of the Arterious Blood, with the ſolid parts; but partly it conſiſteth in a certain expanſive motion or endeavor (like to that expanſive endeavor of the Arterious Blood) excited in the very ſolid parts. The firſt is very perſpicuous, for the Arterious Blood through the impregnation of the Vital heat, when it is received into the ſolid parts, muſt needs with their ſubſtance communicate their heat alſo unto them. The ſecond is likewiſe proved without difficulty, For if the Vital heat radicated in the Arterious Blood conſiſteth in a certain motion or endeavor of that Blood uniformly diffuſed, and withal at the ſame time ſomewhat reſtrained, it muſt unavoidably excite the ſame motion in the ſolid parts thorow which it paſſeth, ſeeing that natural cauſes do alwayes act to the extremity of their power, and as much as is poſſible by way of aſſimilation. If any man doubt whether the Eſſence of the Vital heat conſiſt in ſuch an uniform diffuſive motion, moderately reſtrained and intrinſecally advancing; let him know, that the

the Essence of heat doth in general consist in motion, or a rarifactive endeavor somewhat interrupted, as Sir *Thomas Bacon* doth most clearly demonstrate in his *Novum Organum*. But this I say, the Vital heat, seeing that it containeth in it self the true nature of heat, it will be also necessarily such a rarifactive endeavor somewhat restrained. But that this heat may be restrained to the Vital; more conditions must be added, which nevertheless we cannot in this place either reckon up, or accurately search into, least we should run into an unreasonable digression: In the *interim*, that we may have the matter and the manner of enquiring, whether or no in this affect the Vital heat be moderately according to nature, it seemed good unto us to propound these subsequent conditions.

First, That the Vital heat may be called Natural, or according to Nature, it is requisite, that the Origine thereof be Internal; Namely, in the Arterious Blood, and that it be derived to the solid parts, as hath been said, by the implantation and union thereof; for that any thing may be called Natural, it must needs flow from an Internal Principle, although it be likewise true what things soever do moderately cherish, augment and excite that Internal Principle, may in that respect deserve this appellation.

Secondly, It is required, that that heat be moderate, not unequally remiss or intensive, but communicated to the parts in an even degree.

Thirdly, It is required, that it be in some measure uniform, and like it self in those parts, that rejoyce in the same similary constitution, provided that they be equidistant from the fountain of heat, and after the same manner affected by some other concurrent and adjacent causes. But in the parts further distant from the foun-

tain of heat; yet otherwiſe, as hath been ſaid, after the ſame manner affected, that it may be uniformly diminiſhed: And in like manner in the colder parts in reſpect of the inherent conſtitution, that it may be alſo proportionably more remiſs. Laſtly, In the parts diverſly affected by other cauſes, ſo that one may be much more intenſively hot then another: it is requiſite, that between the hotter and the colder part there be found a heat gradually, and as it were uniformly more remiſs (if you proceed gently from the hotter towards the colder part.) And even a certain uniformity may be obſerved in this deformity or diſparity of heat, ſo long as it continueth within the bounds of Nature. For the parts immediately and intermutually touching one another, are in a preternatural capacity or condition; If one of them be extreamly hot in compariſon of the other. For ſeeing that this Vital heat conſiſteth in a rarifactive endeavor ſomewhat reſtrained, if it be very unequal and diſproportionate in the Parts bordering upon one another, it will happen, that that part which endeavoreth with vehemence, doth withal endeavor to ſeparate it ſelf from that which uſeth no ſuch vehemency, and ſo that will become a preternatural endeavor, cauſing pain: for pain conſiſteth in the ſolution of continuity, not yet made, but to be made.

Fourthly, That this heat may not actuate or aſſiſt the action of any other hurtful conjoyned quality whatſoever. For although in this caſe the conjoyned hurtful quality is chiefly peccant, and meriteth the greater part of blame, yet cannot the heat be altogether excuſed. For an acrimonious and malignant heat, denoteth other qualities to be conjoyned beſides the bare heat, yet the Vital heat it ſelf, in as much as it exaſperateth and provoketh the activity of thoſe conjoyned qualities to a more

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potent depravation and annoyance, it must be judged partly culpable of their vitious actions.

Fifthly, On the part of the resistance, moderation is also required, both in respect of the appeasing of the irritated Vital Spirit, and also in regard of the passage of the Arterious Blood, and finally in respect of the transpiration of the unappeased exhalations.

Sixthly, A certain proportion must be observed between the expansive endeavor of the Vital heat, and the resistance that restrains it, an excess therefore in either of them in it self is not a fault, but if one be disproportionate to another, in that regard it must be reputed faulty.

Seventhly, A certain harmony and order is observable both in the endeavor, and in the resistance. For they do not alwayes proceed in one form and continuation, but as it were fighting, they are sometimes intended, sometimes remitted. And indeed they are chiefly increased in the *Diastole* of the Arteries, where the blood not being contained in his narrow Vessels, strugleth for more room, and so stretcheth the Arteries, till a competent potion of it falleth down into the habit of the parts, and is there digested; for then the place doth not compel the Blood into such straights, but after a short time it desisteth from that impetuosity, and among the causes of the pulsation this motion of the Blood is not the least considerable. Now that we may apply these things to the present business, amongst all the conditions now proposed, the second alone seemeth manifestly to be desired in this affect. For the Vital heat is not here moderate, but defective, and more remiss than the just and Natural Degree. For seeing that the first affected parts are besieged with a cold and moist distem-

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per, and with a penury and benummedneſs of Spirits, they muſt neceſſarily (as we have already demonſtrated) ſomewhat rebate the heat of the Arterious Blood before it is tranſmitted into the ſubſtance of them; whereupon thoſe parts participate a more remiſs degree of Vital heat than is due unto them. And this ſhall ſuffice concerning the communication of the Vital heat to the Parts.

Thirdly, As for the laſt part of the participative Life, which indeed dependeth upon the two former, and which is the firſt in the intention, though the laſt in the execution of Nature; we ſay, that it is in ſome ſort the end both of the Original Vital Conſtitution, and alſo of the diſtribution thereof, and finally of the aforeſaid union and heat communicated to the parts. For the Vital Spirits are not excited in the Arterious Blood for their own ſakes alone, neither are they diſtributed into the parts, and united to them only for their own advantage; but chiefly, that they may enliven and dignifie the inherent conſtitution of the ſolid Parts, and ſo actuate and promote their faculties. For as the heat of it ſelf is only potentially viſible, unleſs it be irradiated with light, ſo thoſe inherent faculties of attracting, retaining, concocting, ſecreving and forming, are dead as it were, and meerly potential, when they are deprived of the vivification and erogation of the Vital afflux, This is moſt clearly conſpicuous in a Lipothymy; for upon the defect of the Vital influx, all thoſe faculties ſuddenly fail, decay, languiſh. But ſeeing all the faculties are eſtabliſhed upon ſome conſtitution, which is both the cauſe and ſubject of them, it might be demanded in which Conſtitution of the parts it is grounded? We anſwer, in reſpect of the potential Nature they are radicated in the Natural Conſtitution

tion which we have before deſcribed ; but that in reference to the Actuated and Elivened Eſſence, that they depend likewiſe upon the Vital influx. And we declare in general, that the participative Vital Conſtitution, which we have already aſſerted to conſiſt in Three things, conjoyned with the Natural Conſtitution, is the total and adequate, both cauſe and ſubject of all thoſe faculties. But it would be a tedious digreſſion, and inconſiſtent with our purpoſe, to make enquiry how thoſe Conſtitutions can produce this or that faculty determinate in its Species. For the preſent we will only run over thoſe faults of the faculties aforeſaid which occur in this affect.

Firſt, The faſhioning vertue here erreth by an unequal purging out of the Vital Blood in divers parts, as we have diſcourſed above. Hereupon the Head and the Liver grow to an unmeaſurable bigneſs ; the firſt affected parts are extenuated, the ends of the Bones ſtick out, and ſometimes the Bones themſelves, which are otherwiſe ſtraight, wax crooked.

Secondly, The Concoctive faculty is weak in this Diſeaſe, and in the firſt affected part by reaſon of the inherent cold diſtemper, the penury and benummedneſs of the Spirits, the brittle and ſlippery union of the Vital ſpirits with the Natural Conſtitution, and by reaſon of the feeble imprinted Vital heat.

Thirdly, The Attractive, Retentive and Expulſive Faculties, ſeem not to recede much from their Natural Condition ; yet the Attractive is ſomewhat more ſlow then ought to be ; the Retentive, by reaſon of the internal lubricity is ſomewhat weaker, and the Expulſive is more vehement for the ſame Cauſe,

And thus at length we have diſpatched the faithful examination of the faults of the Vital Conſtitution in

this

this affect. The Animal Conſtitution ſhould now undergo the next diſquiſition, but that ſome faults of the Natural Conſtitution; namely, the Organical faults thereof, which have ſome dependance upon ſome of the recited faults of the Vital Conſtitution, do challenge this place, as moſt proper themſelves.

CHAP. XIII.

Of Organical Faults of the Natural Conſtitution *in this Affect.*

SEeing that the Organical Faults in this Diſeaſe belong to the Inherent Conſtitution of the parts, thoſe indeed by the Law of juſt Method ſhould be immediately after the ſimilary vices of the ſame Conſtitution; but as we have noted above, the Reaſon and Cauſe of them muſt be derived from the faults of the Vital Conſtitution lately mentioned, and therefore we are conſtrained to premiſe the examination of theſe, and to reſerve the conſideration of the other for another place.

The Organical faults in this affect are fitly reduced to theſe Heads.

First, To the extenuation and leanneſs of certain parts, namely, the parts firſt affected.

Secondly, To the unreaſonably augmented magnitude of ſome parts, as the Brain, the whole Head and the Liver.

Thirdly, To the tumors or lanching out of certain bones,

Bones, as of the Bones to the Wriſts, to the Ancles, and the ends of the ribs.

Fourthly, To the bowing of certain Bones, as it frequently happneth to the Bones of the Cubit, and the Shin Bone, ſometimes to the Bone of the Thigh and Shoulder.

Fifthly, To the pointed figure and narrowneſs of the breſt.

And theſe faults are reckoned beneath among the Symptoms and ſigns of the Diſeaſe, not becauſe they are indeed meer Symptoms, but becauſe they are obvious to the Senſes, and ſo do fitly ſupply the place of ſigns, both in reſpect of the parts of the Eſſence of the Diſeaſe more deeply retired, and alſo in reſpect of the hidden cauſes thereof. For whatſoever is perceived by the ſenſe, and beſides it ſelf repreſenteth ſomewhat elſe to the underſtanding that is obſcure, hath the formality of a ſign. For indeed theſe faults are parts of the ſecondary Eſſence of the Diſeaſe, ſeeing that they are the vitious Conſtitutions of the Organs depraving the action, and have a dependance upon the other parts of the Eſſence of the Diſeaſe.

The common cauſe almoſt of all theſe recited affects ſeems to be an uneven or diſproportionate nouriſhment or *Alogotrophy* of the parts. Now this dependeth chiefly upon two cauſes in this affect. The firſt is, the unequal inherent Conſtitution of the parts irregularly nouriſhed. The diſparity between the inherent Conſtitutions of the firſt affected parts, and the Head and Bowels cannot be ſo well collected by what hath been already ſaid, but that it may deſerve a further inculcation. The laſt cauſe, which is indeed of equal moment, is the very unequal diſtribution of the Arterious Blood into the parts unevenly nouriſhed. That the Blood is unequally diſtributed in this affect we have already ſhewed, here we only

only infer that that muſt needs produce an unequal nutrition of the parts. All Creatures the more liberally they feed, the more fat and fleſhy they are unleſs ſome other impediment doth intervene; but if the due quantity of aliment be ſubſtracted, they grow lean, and are daily more and more extenuated. Why ſhould we not ſuppoſe that the ſame thing happeneth in the Parts of Creatures? the Blood, or at leaſt ſomewhat contained in the Blood, is acknowledged for the laſt aliment of all the parts, where therefore that is liberally diſpenſed to one part, and ſparingly to another; certainly, it is no wonder if one part be exceſſively augmented, and another extreamly extenuated. But theſe things may ſuffice in general. In particular,

Firſt, We aſſert, that the firſt affected parts in this Diſeaſe do daily wax lean, and fall away. Proof of this aſſertion cannot be reaſonably expected, ſeeing that daily experience yieldeth an ocular demonſtration of it. But why thoſe parts are ſo extenuated, that may require ſome reaſons, and we offer theſe.

The firſt is deduced from the primary eſſence of the Diſeaſe; namely, from a cold diſtemper, a penury, and in-activity of the inherent Spirits in the parts aforeſaid, For by this means the attractive, retentive and concoctive faculty, do execute their functions in thoſe parts unduly and ineffectually.

The ſecond is brought from the looſneſs, ſoftneſs, and internal ſlipperineſs of the ſame parts; for hereupon the expulſive faculty is too much irritated, the breathing is too eaſie and diſſipative, the circulation of the Blood is too ſlippery, the retentive faculty through the weakneſs of it, parteth with the aliment too ſoon, and with too much facility: and this very thing almoſt hapneth here in theſe parts, which befalleth the Guts in a *Lyentery*.

How-

Howſoever it be, the expenſes exceed the incomes, and by conſequent thoſe parts are extenuated.

The third Reaſon ariſeth from the unequal diſtribution, and indeed defective in the firſt affected parts, of which we have already ſuperabundantly diſcourſed.

Secondly, We affirm, that in this affect the greatneſs of the Head, and eſpecially of the Liver, as alſo of the Brain is unreaſonably increaſed. Sometimes the *Palſie* in the Head is conjoyned, which nevertheleſs we ſuppoſe to be of a different Species, and no part of this Diſeaſe: although we grant, that this affect may ſometimes give occaſion to the ſupervening *Hydrocephalus*. Moreover, we have ſometimes ſeen the Conſumption being ſuper-induced upon this affect, and long continuing alſo, the Face and the parts about the Head to be ſomewhat extenuate before death. But this was produced by the Conſumption, not by this Diſeaſe we now treat of. But that we may give a reaſon of that greatneſs unmeaſurably increaſed in the Parts aforeſaid. We note.

Firſt, That the parts belonging to the Head and almoſt all the Bowels, do receive the Nerves from that part of the Spinal Marrow, which is included within the Skull, and therefore that theſe parts are not neceſſarily ſubject to that unhappy condition of the firſt affected parts. Wherefore no reaſon doth compel us to affirm, that theſe augmented parts are either affected with a cold diſtemper, or a penury and dulneſs of Spirits, or that the attractive, retentive or concoctive faculties are thereupon vitiated, and by conſequence that thoſe parts are totally exempted from the firſt cauſe of that extenuation which befalleth the parts firſt affected.

Secondly, we obſerve, that neither looſneſs, nor flaccidity, nor ſoftneſs, nor internal ſlipperineſs are predominant in thoſe immeaſurably augmented parts, and

that

that these qualities (as it happneth to the first affected parts) do not yield a more irritated expulsion then is requisite, so that the exportation should be feared to exceed the importation, which we have shewed to befal the extenuated parts.

Thirdly, We observe, that the Blood in his circulation, by how much the more sparingly it is distributed to the first affected parts, the more liberally it doth water and nourish these parts. This we have already proved, and it is needless to insert more arguments to that purpose. These things therefore being observed, the Reason is plain, why the parts aforesaid are unmeasurably and irregularly augmented. For if the attractive, retentive and concoctive faculties be not weakned in them, according to our first annotation, and the expulsive be not immoderately irritated according to the second, and in the interim, if sufficient aliment be dispensed to them according to the third, the bulk of them must needs increase beyond proportion.

Thirdly, We affirm that the protuberancies or swellings of the Bones in the Wrists, Ankles, and the ends of the Ribs do vitiate the Organ in a twofold respect; namely, in respect of the greatness, and also of the figure. The parts vitiated in both respects are obvious to the Eyes, and therefore we shall supersede all further proof.

But why are the Bones stretched out after that manner in those places?

Truly it is very hard to render a Reason thereof, neither perhaps dare we engage our selves by promise to give satisfaction in all respects herein to the curious. Therefore instead of an Answer we dedicate to the Reader these subsequent Observations as not altogether unprofitable.

First, The Bones in many do agree with the substance

of

of the Bowels. For first they consist of a certain similary matter severed from the preter-fluent Blood, not needing any laborious assimilation, and seem to admit a most easie nutrition till they arrive at the exaltation and highest pitch of their encrease; Moreover, they seem to be nourished until by age they are brought to an extream driness, and they seem not to be obnoxious to any considerable extenuation; so the substances of the Bowels are similary being joyned together by the separation almost of the Blood alone, and they likewise easily encrease, and are difficultly and rarely extenuated. Secondly, The Bones are nourished almost after the same manner, as the *Parenchymata* or substances of the Bowels: Through the Arteries they receive the blood; through the Veins they amandate and convey away the superfluous portion of it, and instead of Vessels of the third kind whereby the excrements are expelled, they are furnished with Cels and Cavities. Some perhaps may doubt of the Arteries of the Bones, because so hard and rigid a part may seem unapt to admit any pulsation of the Arteries within it: we grant indeed that the Bones in regard of their hardness and stiffness are less apt for the pulsation of the Arteries, and therefore we acknowledge that they admit not within them any notable ramification or branching of Arteries; but if any man will from thence infer that no Arteries are admitted into them, truly herein he must expect our absolute denial, for they are living Parts, they are nourished, they grow, and they exercise the Attractive, Retentive, Concoctive and Expulsive faculties. Again; they receive the Blood, which they cannot do but by the conduit Pipes of the Arteries, and this is manifest by the bloodiness of them, when the Bones of Living Creatures are either broken, or any other way divided.

In young Creatures the ſpongy ſubſtance of the Bones, and the very Marrow is ſenſibly perfuſed with Blood, and the greateſt part of their Cavities is filled more with Blood than Marrow. In elder and greater Creatures you may obſerve both Veins and Arteries through the Membranes, enwrapping the Marrow; all which things do ſufficiently prove that the Blood is diſtributed into the very Bones. But wiſe Nature (who in the conformation of all the parts, doth moſt exquiſitely and aptly proportion all things) foreſeeing here that the Veins and Arteries could not conveniently be extended by a longer carnification through the ſubſtance of the Bones, by reaſon of their hardneſs, ſhe caſteth that vaſt number of them, ſome being as ſmall as hairs, into almoſt inconſpicuous little holes in the Bones. But if you ſoundly boyl the Bones of greater Creatures theſe Orifices of the inſertion of the Veſſels, may very eaſily be perceived in the outward ſuperficies, if you remove the Skin enwrapping the Bones. But let this ſuffice concerning the Veins and Arteries of the Bones, ſeeing that this matter is ſomewhat incoherent with our ſcope. As for the Veſſels of the third kind, ſeeing that the excrements of the Bones were not about to prove altogether unprofitable, nor could commodiouſly be expelled out of the Body; Nature, inſtead of a Veſſel of the third kind, hath made certain Receptacles (namely Cavities and Cels) into which ſhe would excrete and caſt aſide the excrements namely that fat part which is altogether unprofitable to furniſh the Bones with nouriſhment. There are ſome who ſuppoſe the Marrow to be the principal nouriſhment of the Bones, but very inconſiderately, ſeeing that the Marrow, as we have ſaid, is altogether unapt for the generation and nouriſhment of the Bones, for the bones are not only moſt hard

hard and ſolid, and naturally of a white colour, but they conſiſt of a certain earthy and clammy ſubſtance, which conditions differ very much from Marrow. Again, Marrow cannot by any art be ſublimated to the firmneſs of a Bone. Moreover, Marrow melteth, and is diſſolved with a moderate heat of the fire; but the Bones endure the moſt ardent flames of fire without any melting. Beſides, Boil the Bones as long as you pleaſe, they reſolve into a gelly, not into the ſubſtance of, or like Marrow. Again, Bones may be worn to powder, ſo cannot Marrow. Certain therefore it is, that the marrow is not the Aliment of the Bones, but a kind of excrement: or rather ſecrement of them, profitable indeed, and therefore to be preſerved in thoſe receptacles. For the Bones being otherwiſe dry, cold and rough, would be unapt for motion, were they not moiſtned and made ſlippery by the exundations and exhalations of the Marrow, and cheriſhed by their gentle heat. All theſe things are confirmed by this ſingle experiment. In young Creatures the greatneſs of the Bones being conſidered, there is leſs Marrow in the Bones, and more Blood than in greater Creatures. In the Embrion, there are ſcarce obſerved any ſigns or appearances of Marrow diſtinct from the Blood. But after the birth, the medullary ſubſtance is daily augmented, and it is viſibly perceived to be leſſe and leſſe intermingled with the Blood; again, in the maturity of years, the Bones are filled almoſt with pure and ſincere Marrow, without any conſiderable commixture of Blood; but in the approaches of old age, it is credible, that the Bones are leſs and leſs watered with the circulation of the Blood; and perhaps the Marrow it ſelf upon the ſuſpenſion and ceſſation of the nouriſhment is rather augmented than diminiſhed; in which reſpect the propounded experi-

ment muſt be peradventure limited. Thirdly, the Bones (the Teeth perhaps excepted) cannot want their Nerves, at leaſt very little, neither are they ſuppoſed to be otherwiſe ſenſible, then by reaſon of the *Periofium*, or the Fibers thereof faſtned into the Orifices of the Bones. In like manner the ſubſtances of the Bowels ſeem to obtain that dull ſenſe which they poſſeſs, rather by the Membranes and veſſels, then from their own ſubſtance.

From hence we collect, that the Bones in this affect are not much otherwiſe affected, than the ſubſtance of the Bowels in reſpect of nouriſhment. We have already ſhewed, that the Bones are not to be reckoned among the firſt affected parts, as likewiſe neither the *Parenchymata*: onely we here further affirm, that all the Bones univerſally conſidered, are not perhaps leſs ſparingly nouriſhed in this Diſeaſe, than they uſually are in ſound Bodies; for if they be nouriſhed by way of coaugmentation, or joyning together, as the *Parenchymata* are, and with ſuch facility alſo, if they poſſeſs Arteries and Veins delated unto them, and Cels and Cavities to receive the Blood, if they be not in the number and condition of the firſt affected parts, and if they receive not Nerves from the ſpinal Marrow; it is very credible that they do duly receive, laudably retain, and perfectly concoct their Aliment. Moreover, If you will conſult experience, Children afflicted with this Diſeaſe, a regard being had to their age, and the magnitude of their parts, weigh heavier than others for the moſt part, as we have ſometimes obſerved, which very thing ſeemeth partly to be aſcribed to the greatneſs of the Bones. Although in this caſe we wiſh more frequent, certain and accurate obſervations, which others who are befriended with opportunity may oblige the world withall: in the mean time we ſuppoſe in general

that

that the Bones are not illiberally nouriſhed in this Diſeaſe.

Some may reply, *That what hath hitherto been ſpoken doth concern the nouriſhment of the Bones in general, but that they yield not a reaſon of the protuberances in them.*

We deny it not, but ſeeing that theſe faults of the Bones depend upon their unequal nouriſhment, as we have already proved, we ſuppoſed it would not be unprofitable to propoſe ſome reaſon of their nouriſhment in general: now we draw nearer to the aforeſaid ſwellings of the Bones. And we obſerve, Secondly, That thoſe tumors of the Bones are not of a different kind in reſpect of the other parts of the ſame Bone, but that they are parts altogether ſimilary, and of the like kind with the reſt, and that they are not faulty in reſpect of the ſimilary Conſtitution, but in reſpect only of their greatneſs and figure.

From hence it followeth thirdly, that theſe ſwellings are not produced by any illegitimate matter of the Bones, or by any other vertue than the ſame by which and from which the other are generated.

Fourthly, That the ſaid ſwellings are produced by an unequal nouriſhment of the Bones, as by a more liberal nouriſhment of the ſwelling parts, and a ſparing nouriſhment of the other parts of the ſame Bone. And theſe Three laſt Obſervations we have already abundantly proved where we treated of the affected parts.

Fifthly, We obſerve the *Epiphyſes* of the Bones in the Wriſts and Ankles, and perhaps in ſome other places, to be more ſoft and ſpongy than in the other parts of the ſame Bones. And peradventure they receive into themſelves greater Arteries and Veins, although indeed we are not yet fully aſſured of this. The

tops of the Ribs are alſo much more ſoft and ſpongy than the other parts of them. From whence we infer that thoſe more ſoft and ſpongy parts of the Bones may more eaſily and freely admit the circulation of the Blood, and therefore be more plentifully nouriſhed than the reſt of the parts of them. You will ſay, That ſoftneſs and ſpongineſs of thoſe parts is obſerved to be as well in healthful Children as in thoſe affected with this Diſeaſe. We grant it, but yet it muſt needs be, that thoſe parts which are of a more compacted ſubſtance, and with difficulty admit the circulation of the Blood, muſt be affected and obſtructed upon lighter cauſes then thoſe parts that are more open, and more eaſily receive it. But the Blood in this affect is tranſmitted to the external parts ſomewhat more cold, viſcous and thick then it ought to be; therefore thoſe parts which are unapt to admit the circulation of it, thoſe are more apt to be ſomewhat obſtructed, and leſs liberally nouriſhed.

But, *Why alſo are not thoſe ſoft and ſpongy parts more liberally nouriſhed in ſound Bodies, ſeeing that they* (as hath been ſaid) *do more plentifully receive the Blood?*

We anſwer, Becauſe as in health thoſe parts do in a larger meaſure receive the Blood thorow the Arteries, ſo they remit the ſame more plentifully thorow the veins which certainly doth preſerve them from that exceſſive augmentation unto which otherwiſe they would grow. But in this affect the ſame parts by reaſon of the coldneſs, thickneſs and viſcoſity of the Blood, do perhaps more ſparingly and more ſlowly remit it, then it is poured into them, and therefore from that abundance and exceſs of the Blood, thoſe parts do ſomewhat increaſe; whilſt the other parts of the Bones by reaſon of the narrowneſs of the cavity of the Artery, are not perhaps ſufficiently nouriſhed with Blood, whereby to obtain an

equal

equal nutrition and increaſe. And from hence (at leaſt probably) we deduce the inequality of the nutrition of the Bones in this affect. But the condition of the Blood whereby in this Diſeaſe it is apt to obſtruct any parts thorow which it floweth, ſeems to have a peculiar reſpect to the quality of the Bones. For in the Bowels, the Lungs excepted, the Blood doth ſeldome Generate obſtructions, as alſo neither in the firſt affected Parts: However it be the Bony ſubſtance, either becauſe it is incapable of the internal ſlipperineſs, or becauſe the nutritive juyce in the maſs of Blood is peculiarly apt to congeal in the parts ſo vehemently fixed: or laſtly, becauſe it hath in its own nature ſome affinity with the Bones: we ſay, the Bony ſubſtance is eaſily infeſted with obſtructions in this Diſeaſe, and thereupon it happeneth to be unequally nouriſhed.

The *faults of breeding Teeth* are likewiſe to be referred hither, ſeeing that they alſo ſeem to depend upon this unequal nutrition of the Bones. For if the Teeth ſhould be equally nouriſhed, they would be of a uniform ſubſtance, and would not fall out by pieces, as it here frequently happneth. For the ſimilary parts, when they are equally nouriſhed, acquire not ſuch an interrupted and unequal conſiſtence, as to be eaſily broken in pieces. Wherefore ſeeing the Teeth are parts naturally delighting in a ſimilary ſubſtance, were they equally nouriſhed, they ſhould enjoy an equal and uniform conſiſtence, and would either continue firm in their gums, or would fall out whole: And there can ſcaree any other reaſon be given, why they ſhould be broken, and fall out more on one ſide, or in one part then another. We grant indeed, that their aptneſs to break, may hitherto conduce very much: but we conceive, that even that aptneſs to break doth in great part depend upon the unequal nutrition aforeſaid. For otherwiſe

the Teeth do usually obtain a very firm, solid and coherent substance; and the truth is, they seem to consist especially in this viscous affect of a very matter. For the Blood for the most part is observed to be more viscous and thick then ordinary, so that this aptness to break off the Teeth, cannot be so easily ascribed to a defect of viscosity in the matter, as it may much more probably to the inequality of the nutrition. We conclude therefore, that the standing out of the Bones, and likewise the faults of the Teeth, do proceed from the unequal nutrition of these parts, arising from a peculiar obstructive disposition of the Blood, having reference especially to the Bones. Now we proceed to the crookedness of the Bones in this affect.

Fourthly, In this affect the Bones are frequently somewhat crooked, especially the Shin-Bones, and the lesser Bones of the Legs; also the Bones of the Cubit, the lesser of the two long Bones of the Cubits, and the bigger Shank-Bone, sometimes the Bones of the Shoulder and Thigh: some Joynts also become crooked, sometimes inward, sometimes outwards: the whole Spine is likewise many times bended, sometimes it is wreathed like the letter S; namely, partly forwards, partly backwards, and sometimes partly to the right Hand, partly to the left.

Some ascribe *this crookedness of the Bones* to the bending faculty of them; for say they, in the tender age of Children, the Bones themselves are not so stiff, stubborn and inflexible, as in their riper years; and therefore upon the invasion of this Disease, they are rendred in some degree easily flexible. Therefore they rebuke the Nurses, which too soon commit the children to their Feet, supposing, that the Bones are made crooked by the sustained burthen of their Bodies. Others also tax the Nurses of imprudence in swadling them.

But

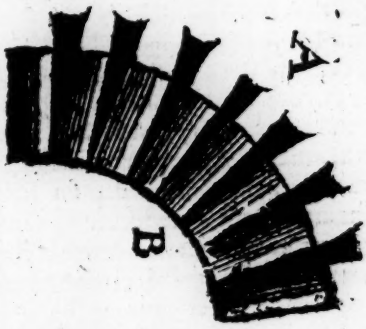
But we cannot yield our full assent in all respects to these Reasons. And first we flatly deny, that the Bones of Children afflicted with this Disease are more flexible, or less stiff and friable then the Bones of others. For we have already proved, that the Bones in this affect do not differ in respect of their similary substance from the Bones of sound persons. Besides, no man hitherto worthy of credit hath attested that he hath seen the Bones flexible in this Disease. Moreover, if we should grant that in this tenderness of years the Bones might perhaps be somewhat bended, yet they would not continue so bent like lead or wax, but being left to their liberty, they would return again to the proper position and figure of the parts. For they consist not of any ductile matter, and therefore by being thus bent, they would either be broken or else doubtless, they would endeavour to re-obtain their former situation. As for the ignorance or negligence of Nurses, although we do not altogether excuse it, yet cannot we justly impute this crookedness of the Bones to their carelessness. We see the Children of Poor People are ordered and handled with less care, and sooner committed to their feet then the Children of the rich, yet the Children of Poor People are more rarely afflicted with this infirmity, then the Children of the rich. Besides, we have known Nurses use all manner of diligence as swadling them, and every other way laboring to prevent this incurvation, yet all their pains, otherwise praiseworthy, hath in this respect been successless. Therefore we must endeavour to find out some other cause of this crookedness.

We compare the Bone therefore, in which this crookedness useth to happen to a Pillar, and not unaptly, seeing that when they are erected, they resemble a Pillar; and from thence we deduce a demonstration that illustrates

ſtrates and makes the matter very plain. Let the Pillar therefore conſiſt of three ſtones A B C placed over one another. We ſuppoſe it ſuch an one as is perpendicularly erected on every ſide, and of the ſame height: If therefore you ſhall faſten in a wedge on the right ſide between the ſtones A B through the line F D, the Head of the Pillar; Namely, the ſtone A will of neceſſity be bended towards D, and will make an Angle in D, and the height of the Pillar on the right ſide will be higher than on the left. In like manner, if you drive in another wedge thorow G E into the ſtones B C the pillar will be yet more bowed, and the angle will be made in E. Now therefore the Pillar ſtandsbent to the left hand after this manner.

ABCFGDE, but if you build the Pillar of more ſtones, and betwixt every two, as hath been ſaid, a wedge be interpoſed on one ſide, it will not reſemble the figure of a Pillar, but the proportion of a Bow, as by this following may be perceived.

Now



Now that we may accommodate these things to the present business, if the Bones aforesaid be more plentifully nourished on one side, and therefore do grow out more on that then the opposite side, there is a necessity, that that must grow crooked: For here the overplentifull nutrition of that side hath the same power after the same manner to bow the Bones, as the interposed wedge hath to bow the Pillar, save that the wedge is fastned only in some places of the side of the Pillar, and the overplentiful nutrition of the side of the Bone, is commonly equally made, according to the whole length thereof. For the aliment received into the Bone, in what part it more liberally admitteth it, that part it obstructeth: and like the wedge thrust into the Pillar it extendeth it into an augmented length, whereupon the Bones must needs be bowed towards that side which is not lengthened in an equal degree with the other. Moreover, if the production of one side of the Pillar happen only in one or two places thereof, and not in many, as in the third figure, then

so

ſo much the nearer the inflexion of it approacheth to the figure of a part of a Circle, or a Bow. But if the ſaid ſide according to the total longitude thereof, ſhould be equally lengthened beyond the oppoſite ſide, doubtleſs it would be bended towards the oppoſite ſide, and would exactly reſemble a piece of a Circle or Bow without any Angles: juſt after the ſame manner ariſeth the bending of the Bones in this affect: namely, from the greater lengthening of the ſide moſt nouriſhed; for ſeeing that that lengthening happeneth by the received aliment, according to all the parts of that ſide, an Angular figure cannot be expected, or one compounded of many ſtraight ones angularly connexed, but a crooked one like a Bow, wherein the convex part is conſtituted by the ſide, plentifully nouriſhed, and the concave or hollow part by the ſide, which is ſparingly nouriſhed. But when it happeneth that ſome part of the convex ſide of a crooked Bone is diſproportionately nouriſhed, in reſpect of the oppoſite ſide, without all doubt the convex Bone will ſtick out more on that part then in the reſt: and ſo from the inequality of the nutrition, we have given a reaſon of the crookedneſs of the Bones in this affect. We will add for a higher confirmation of this matter, An obſervation raiſed from the cure of this crookedneſs of the Bones. The Quacks of our Country are wont to rub daily the hollow, not the convex ſides of the Bones, and that rubbing, ſay they, doth very much conduce to the cure, but this doth rather hinder it. But it is certain, that rubbing doth powerfully ſummon the nutritive juyce out of the Bloody maſs into the part ſo rubbed, therefore if at any time you rub that hollow part which is inſufficiently nouriſhed, it is no wonder if it do good, ſeeing that thereby the aliment is more plentifully allured, and the heat of the part is alſo excited and augmented; neither on the one ſide is the

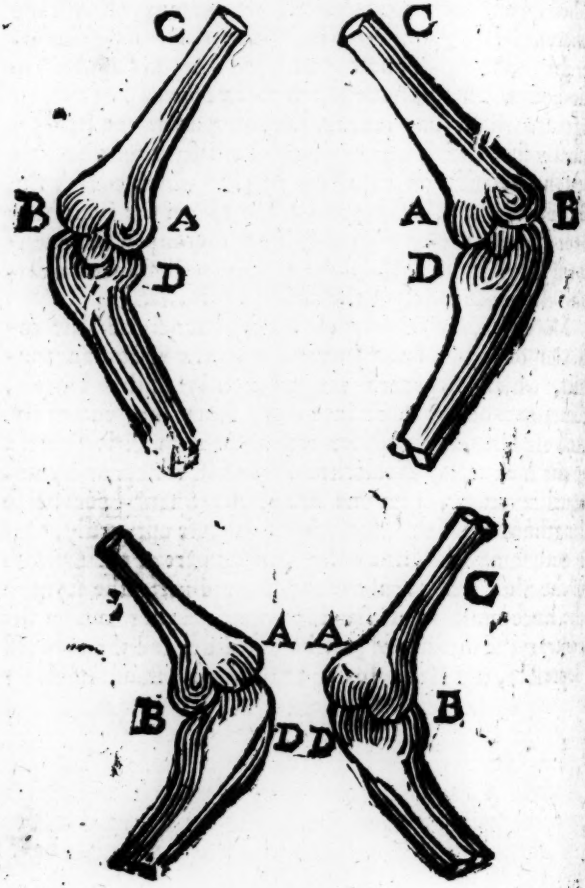
Gib-

Gibbous part of the Bone being hurt by rubbing, to be wondred at, becauſe by that means the aliment is attracted to that part which was before ſuperabundantly nouriſhed: beſides the Oyntments, which may cheriſh the inherent heat, and ſtrengthen the nutritive faculties after the rubbing, do moſt good when they are applyed to the hollow part of the Bone; but to the convex part a ſtrait ligature which may reſtrain the riſing up of the Bones is uſually fitted with deſired ſucceſs: chiefly indeed for this reaſon, becauſe the capillary Arteries which convey the Blood, or nutritive juyce to that ſide of the Bone, are bound up by ſuch a ligature, and thereupon the nutriment is leſſened. And theſe things ſhall ſuffice concerning the crookedneſs of the Bone in this affect.

Moreover, To this Article we oppottunely add the inflexion of ſome of the Joynts, as of the Knees and Ankles, which happneth very frequently in this Diſeaſe, ſometimes being made inwardly, ſometimes outwardly. And this bending alſo ſeemeth to be not unfitly referred to the inequality of nutrition. For if it happen by unequal nutrition, that one ſide of the Shank-bone be ſo lengthned more then the other: ſuppoſe outwardly, that it doth ſomewhat lift up the outward part of the *Epiphyſis* of the Shank-Bone above the inward part, the joynt in the Knee muſt needs ſtand outwardly bent; and on the contrary, if the inward part be lifted up, and the outward depreſſed, the ſame Joynt muſt needs ſtand inwardly

bent:

bent: as may be eaſily perceived by the following Figures.



In

In the Joynt of the Knee, A B, that part of the appendance of the Shank-bone B in the two first Figures, is higher than the other part of the same appendance; whereupon the Bone of the Thigh (is inwardly bowed, and so likewise is the Shin-bone D; but the Joynt A B is thrust somewhat outwardly. But in the two last Figures all the contrary things may be observed. The Joynt A B is inwardly, because that part of the Shin-bone A is higher than the other part of it B. Whereupon it must needs lift up the inner and lower top of the Thigh-bone, so that the Thigh-bone will be bent outwardly, and the Joynt inwardly.

The same thing likewise may happen in the Ankle-bones, and the turning Joynts of the Back, if the Bones fastned to the Joynt be higher on one side than on the other. But in the Ankles, because there, besides the Shin-bone, the lesser Bone of the Leg is also fastned through the Joynt, it may so fall out, that the lesser Bone below may stand out further than the Shin-bone, and so bend outwardly the Joynt of the Ankle; and on the contrary, if it happen that the Shin-bone be longer then the lesser bone, the Joynt must needs be inwardly bent. Although we confess that such an inequality of length between the Shin-bone and the lesser bone in the Leg doth not so often happen.

Moreover, We suppose that the preternatural bending of the Spine doth rarely happen from the unequal altitude of the sides of the turning Joynts of the Bones, but more often from another cause which we will now prosecute. We have already said, that the Spine is somewhat weak in this affect, and that Children afflicted with this Disease are unapt not only to motion, but also to stand upon their feet, yea, and to raise their backs by reason of the weakness of the Spine. Therefore

when

whenſoever their Bodies are raiſed, they ſeek ſomewhat to reſt upon, and they ſuffer their Spine to be bowed, ſometimes forwards, ſometimes backwards, ſometimes to the right hand, and ſometimes to the left; whereby the burden of their Body may be reſted upon ſomething that ſtands near them. Hereupon it many times happens, that the Ligaments of the turning Joynts of the Spine in that part which is moſt commonly bending out are looſned and lengthned, and on the oppoſite ſide they are contracted; ſo that in tract of time the Spine cannot be erected according to the ſtraight and natural Figure. And truly in this caſe we cannot excuſe the Nurſes indiligence or negligence, becauſe they do not obſerve with a ſufficient attentiveneſs, to which part the Children which they ſuckle are moſt prone to bend their Bodies, that by that means they may endeavor to bend them to the oppoſite part: In like manner alſo when Nurſes without due regard and care do too ſoon commit weak Children to the uſe of their feet, it may happen, that when the regular motion of the Muſcles is too weak to bear the body, Children may ſuffer either their Knee or Ankle to be bowed to one ſide; whereupon the Ligaments of the Joynt are extended either on the inner or the outward ſide, and by conſequence the Ligaments on the contrary ſide are contracted, whereupon the joynt muſt needs be bended either inwardly or outwardly, therefore although we have denied above, that the crookedneſs of the bones dependeth hereupon, yet we grant, that the bending of the Joynts may happen in weak Children by the negligence of the Nurſes. We grant moreover, that the bones which would otherwiſe have been ſtraight, may be crooked by an unskilful ſwadling; yet that this cauſe doth happen exceeding rarely in this affect, we are ſomewhat con-

confident, as we have ſhewed already more at large. Now we proceed to the pointedneſs and narrowneſs of the breſt in this affect.

We obſerve that this pointedneſs and narrowneſs of the breſt doth not appear preſently at the beginning of this affect, but that it ſucceedeth upon the confirmation of the Diſeaſe, and is by degrees intended, till by the perſeverance of the Diſeaſe it becomes exact and conſpicuous, when the breſt forwards reſembleth the breſt of a Hen, or the Keel of a Ship. This vitiated Figure of the breaſt which otherwiſe ſhould be broad according to Nature, and not ſtraightned on the ſides, and even not pointed forwards, we reduce to four cauſes. The three former whereof we confeſs do contribute little efficacy to this matter, but the fourth alone doth almoſt all the work. Yet becauſe the three former do contribute ſomething, we will likewiſe recite them here in order. Be this the firſt, In this affect the bone of the Stern by reaſon of the augmented bulk of the Liver is ſomewhat elevated or thruſt forward, whereupon there happeneth ſome part of the ſaid vitiated Figure; and moreover from the ſame elevation of the bone of the Stern there happeneth a certain contraction of the Ribs towards the Spine, and this cauſeth the other part

of the vitiated Figure. This contraction of the Ribs we thus demonstrate. Let the circle be A B C D, this must be supposed to be made of a flexible matter, but not equally extensible, as for example, of the bone of a Whale. Therefore when the sides A C are both stretched from one another, so that line of distance is produced into length between A C, then the sides of the circle D B are necessarily contracted almost in equal degree, and by the same means the line of lateral distance from D to B is abreviated; for the Circle becomes an Oval Figure, as any man shall find who will take the pains to reduce it to experiment. For the Figure will be changed into this form which the Figure following doth expresse; In which the line of distance between A and C is represented longwise, and withall the line D B appears to be abreviated, and the Circle becomes Oval; neither is there need of more words to prove this matter.

Now it must be known that the opposite couples of the Ribs do expresse a certain rude kind of circular Figure, especially the uppermost which chiefly fashion the Brest by the mediation of the Spine on the hinder part, and the Stern on the forepart. Nor should it trouble any man, because they

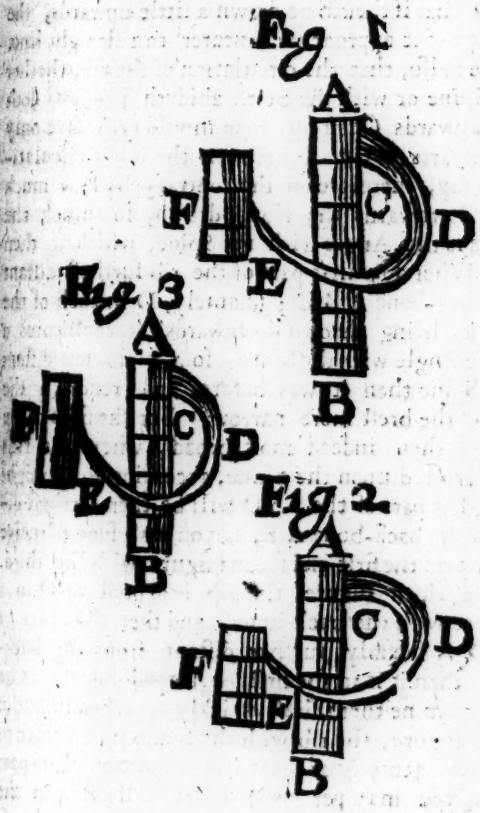
they will not make an exact and perfect Circle, *seeing* that our demonstration is as effectual in a circular Figure how imperfect soever, as in the most exquisite and perfect; provided that there be a coherence among all the parts, that they be not distorted, that they be flexible, but not easily extensible; which conditions are sufficiently conspicuous in the Figure of the Ribs even now proposed to view. Therefore if in this affect the bone of the Stern be somewhat elevated forwards, that it may yield room to the augmented bulk of the Liver, the ribs towards the Spine must needs be drawn in nearer to one another, whereupon the breast must unavoidably be laterally straightned, the latitude of it being lessened.

Some may say, *If the rising of the Bone of the Stern did conduce any thing to the pointed Figure of the Breast, it would chiefly effect that about the inferior Ribs, seeing that this elevation of the Stern doth begin at the lower part; but it is manifestly known to fall out otherwise: for the narrowness of the Breast happeneth chiefly about the Armpits, and afterwards beneath the Channel Bones: but the lower Ribs seem to be enlarged about the sides rather than straightned.*

We answer, That the five lower ribs are not articulated with the Stern, neither do they make a perfect Circle; and therefore in no wise do they relate to the propounded demonstration; but the stretching of them dependeth upon another cause, namely, the fulness of the Hypochondriacal parts. Let it likewise be noted, that we assign not this for the chief cause of the vitiated Figure, yea, we suppose that it conferreth very little towards it. And so we proceed to the second cause of this vitiated Figure, which we also conceive to be a very slight one.

In this affect the *Hypochondriacal* parts are almoſt pe
petually obſerved to be full and ſtretched, namely, both
in reſpect of the greatneſs of the Liver, and alſo becauſe
all the other bowels almoſt which are contained in the
bottom of the belly are ſufficiently large; ſeeing that
as hath been ſaid, the firſt eſſence of this Diſeaſe is ro
rooted in them. And laſtly, becauſe the Guts and th
Ventricle are uſually more or leſs diſtended with wind
But now from that fulneſs and extenſion of the *Hy-*
pochondriacal parts we may juſtly collect that in this affect
the Ribs are drawn downwards a little more then is ex
pedient. For the greateſt extenſion is here obſerved in the
oblike Muſcles that are extended beneath the *Hypochon-*
driacal parts; Now the Muſcle obliquely deſcending
hath toothed heads faſtned to the ſixth, ſeventh, eighth
and ninth Ribs, and the part of the broad tendon alſo ob
likely aſcending is adjoyning to the griſtles of the ninth
tenth and eleventh Ribs. Wherefore ſeeing that the ſaid
Muſcles are almoſt perpetually too much extended in
this affect, they muſt needs in ſome manner draw the ſaid
Ribs downwards, and ſeeing all the Ribs are firmly faſ
ned together by the intercoſtal Muſcles, it happens
that in this affect all the Ribs are ſomewhat drawn down

wards. But now that these Ribs so drawn down do somewat straighten the Breſt, may be perceived by this following Figure.



Let A B be the back-bone, C D E the rib, F the bone of the Stern, We ſuppoſe that every one may ſee here in the *Skeleton*, that the ribs are not conjoyned with the Spine according to the ſtraight Angle, but that the Angle beneath the rib is ſomewhat leſs then the ſtraight Angle: So that if the rib be drawn a little upwards, the Articulation of it approacheth nearer to a ſtraight line. We ſuppoſe alſo, that the circulation of the rib, whether with the Spine or with the Stern abideth firm, and doth not draw upwards (leaſt any man ſhould err) ſave only the middle parts of the rib between the ſaid Articulations. We ſay, therefore on the contrary by how much the more downwards the rib is drawn, ſo much the more acute is the Angle with the Spine, which it then maketh: Wherefore that part of the rib furtheſt diſtant from the back-bone A B C; (namely, D in each of the Figures) as being thrown downwards, it conſtitutes a more acute Angle with the Spine, ſo is it alſo leſs diſtant from the Spine then it was before, and rendreth the broadneſs of the breſt more narrow. For the ſides of the breſt were then indeed moſt broad, when the ribs are moſt erected upon the Spine, according to a ſtraight line. For that part of the rib D will be then furtheſt diſtant from the back-bone A B, as you may ſoon perceive if you compare the firſt and ſecond figure with the third. For in the third Figure, the rib is expreſt erect in a ſtraight line with the back-bone, and then that part of the rib D is ſenſibly further diſtant from the back-bone A B, then it is in the firſt or ſecond figure, as he that will examine them, ſhall quickly apprehend: but in the ſecond Figure, the rib with the Spine is ſuppoſed to make a more acute Angle, and in proportion that part of it D (as you may perceive) is leſs diſtant from the Spine than the ſame part D in the ſame Figure, whoſe

Angle

Angle is ſuppoſed to be leſs acute; and yet that is much leſs diſtant from the Spine, then in the third Figure, whoſe Articulation is erected to a ſtraight Angle. We infer therefore, that the ribs when they are drawn upwards, do amplify the breſt ſidewiſe, but when they are drawn downwards, then they ſtraighten the breſt on the ſides.

This is further confirmed in that, becauſe at ſuch time when the breaſt is dilated; namely, when the breathing is rightly performed, the ribs are drawn a little upwards by the ſtrength and force of the *Intercoſtal Muſcles*; and when the expiration is performed; namely, when the breſt is contracted, the ſame ribs are drawn back again downwards by the help of the oblique *Muſcles* of the *Abdomen*. Any man may obſerve this in himſelf or in any other man, eſpecially in great inſpirations and expirations. For in a vehement inſpiration he ſhall plainly perceive the ribs at the ſame time to be lifted upwards, & withall to enlarge the breadth of the breſt; but in a vehement expiration he ſhall feel the ribs as it were bowed downwards, and at the ſame time contracted inwards. Neither of theſe things could happen, unleſs the poſition of the ribs were ſuch, as that thoſe beneath in reſpect of the Spine, ſhould make an acute Angle, and being more depreſſed, ſhould make it ſo much the more acute, and by conſequence the breſt ſhould be then moſt ſtraightned; and on the contrary, being lifted upwards, they ſhould approach nearer to a ſtraight Angle, with the Spine, and ſo extend the ſides of the breſt. We conclude therefore, that the ribs in this affect are drawn ſomewhat downwards, and that the breſt is contracted on the ſides by reaſon of the plenitude and tenſity of *Hypochondriacal* parts; although we grant as we have intimated above, that this cauſe is not ſo conſiderable, that

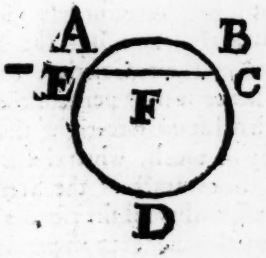
we ſhould attribute any great part of this Diſeaſe unto it.

Be this therefore the third, The Cauſe of this vitiated Figure of the Breſt, *Is a lateral growing of the Lungs to the Pleura*, in this Diſeaſe eſpecially, being confirmed, it is moſt frequently obſerved to happen. Doubtleſs ſuch an adnaſcency doth reſtrain and interrupt the motion of the Ribs outwardly, whereby the Breſt is laterally dilated. For if the rib under which this adnaſcency lieth, ſhould endeavor forcibly to remove it ſelf from the center of the Breſt, there would be danger of pulling the Lungs that grow to it, or the *Pleura* it ſelf from the rib with intollerable pain. For although the Lungs upon the ingreſs of the ayr admit an eaſy extenſion, according to all the parts thereof, yet when they fall down, or are ſtuffed with thick humors (which moſt frequently happeneth in this caſe) they ſcarce admit any notable diſtention, without diſſolving the unity either of ſome Veſſel, Membrane, or the ſubſtance of the Bowels themſelves. Moreover, whilſt we conſider that in ſound bodies the Lungs are very rarely laterally divided from the *Pleura*, and but in thoſe parts only of the cheſt, which were to be expoſed to motion at a conſiderable diſtance; namely, the Back, the Stern, the *Mediaſtinum* (that is the Membranes that divide the middle of the Belly) and perhaps the middle parts of the *Diaphragma*, *&c.* We conceive that wiſe nature did this deliberately, and with deſign; namely, leaſt their connexions ſhould either offend the dilatations of the Breſt, or render the Lungs themſelves obnoxious to thoſe kind of calamities. However it be, it is ſcarce conceivable, but that preternatural growing together of the Lungs with the *Pleura*, more or leſs muſt hinder and retard the free ſpreading of the ribs towards the ſides, and therefore it conduceth a little at leaſt to occaſion the narrowneſs of the Breſt.

Be this the fourth, The cauſe of the vitiated Figure foreſaid, is an unequal nutrition of certain parts of the ribs in reſpect of others. And this cauſe we affirm to be much more effectual then the reſt, to procure this Symptom. Which that we may demonſtrate, we aſſert firſt, that the ſeven uppermoſt ribs do chiefly, if not ſolely conſtitute this Figure of the Breſt: for the five lowermoſt, as they are not immediately conjoyned with the Stern; So neither can they in any manner point or elevate the Stern. Add alſo, that ſeeing (as we have already ſhewed) they do not cloſe in perfect Circles, their Figure is eaſily moveable, that it may more or leſs yield to the fulneſs of the *Hypochondriacal* parts. But the ſeven upper ribs are Articulated by their Griſtles, with the bones of the Stern: from whence it may perhaps come to paſs, that they do ſomewhat lift up fore-right thoſe bones of the Stern which they do touch, when the five lower ribs being deprived of the contract of the Stern, cannot effect it. Secondly, We aſſert, that all the ribs, and not only the five lowermoſt, but alſo the ſeven uppermoſt do admit an equal nutrition in this affect, and that they are more nouriſhed in one part then in another, and therefore that they are more extended in length by that then by the other, which is more ſparingly nouriſhed: and indeed that they grow more on that ſide in which they are conjoyned with the Griſtles of the Stern, and that they are leſs and more ſlowly lengthened on the other part, namely, the Head or top, whereby they are faſtned to the Regions of the back. The reaſon is, becauſe the forepart of any rib is more ſoft and ſpongy then the hinder part of it, as any man may make tryal in any Creature. Seeing therefore (as it is clear by what hath been ſaid) that the ſofter parts of the bones do in this affect more eaſily receive their aliment and augmentation, then the har-

der

der and more solid, it followeth that the foremost parts of the ribs which are most soft, are more lengthened than the undermost. Thirdly, We assert, that in a body of a Circular or Annulary Figure, if one part of the ring be more lengthened than another, the other parts must needs give place to this increase, or else that part so unequally lengthened, will either outwardly hang out, or be inwardly knotted either upwards or downwards, and be bent either one, or many of these wayes. This we thus demonstrate. Let the Circle or Ring be A B. Let the former parts of it be supposed to be lengthened from A to B. But the other parts of it; namely, C D E to remain in their position, and not at all to yield to the said lengthning. These things being supposed, the lengthened portion of the circle, namely, A B must needs be either lifted up outwards, or depressed inwards, either bent upwards or downwards or variously: For otherwise the distance between the limits of the string F would not suffice to contain that portion of the Circle now lengthned, the figure of the Bow being changed. For those limits did only suffice before; therefore the Bow being lengthned, and not the string, or the tops and limits of the string, it cannot be, that the Bow should be to the string as before. It must be changed therefore, the bending being made either outwards or inwards, or upwards or downwards, or many of these wayes, as may be perceived by the Figures following. The first Figure represents a



Bow

Bow outwardly prominent: The second, Inwardly, and the third variously bent and intorted. And indeed the first doth very fitly set out the Figure of the Breſt vitiated in this affect. For we have noted above, that the ribs articulated with the Stern and Spine do make a kind of imperfect ring, and that they are in this affect sooner nouriſhed, and lengthned in the foremoſt then in the hindermoſt part, therefore in reſpect of the cauſe this Symptome fully and fitly agreeth with that Figure first deſcribed. Beſides, we have ſuppoſed that the parts of the Circle do remain firme: that alſo in this affect may be accommodated to the lateral and hindermoſt parts of the ribs. For ſeeing theſe grow much leſs then the foremoſt, certainly they may well be ſuppoſed to be ſtable, unleſs perhaps ſome may ſay, that either the ſides and hinder parts of the ribs, by dilating themſelves or their Joynts, with which they are faſtned with the turning Joynts of the back, by ſuffering the ribs to be bended backwards, do yield ſome-

ſomewhat to that exceeding augmentation. But neither of theſe can be rightly ſaid. For firſt, the later and hinder parts of any rib as they are more hard and ſolid, ſo are they likewiſe more ſtiff and ſtrong then the foremoſt; now it is abſurd to imagine that the weaker parts of the ſame rib can bend the ſtronger, or that the leſs flexible parts will yield to theſe parts which are eaſily flexible. Wherefore the lateral and hinder parts of the ribs cannot be ſo bent, as that they ſhould yield to the foremoſt lengthened parts thereof. As for the Joynts of the ribs, doubtleſs that Joynt wherewith the rib is conjoyned with the turning Joynt of the breſt, can by no means ſuffer the rib to be bent ſo much backward, as that it ſhould yield to the lengthning thereof; and that not only becauſe it is double, namely, in the hollowneſs of the turning Joynt, and in the tranſverſal proceſs thereof: and therefore very unapt to permit a backward motion. But chiefly, becauſe it is even ten times ſtronger than the foremoſt Joynt, wherewith the ſame rib is faſtened to the bone of the Stern. Now a Joynt ten times ſtronger, and withall double, and in ſuch a manner formed double, that it is altogether unapt to endure any retrograde motion, cannot by any means be imagined to yield backwards, leaſt the Joynt ten times weaker ſhould be bent ſomewhat forwards. We muſt conclude therefore, that the lateral and hinder parts of the ribs do not yield to that unequal production of them which happneth forwards, and by conſequence, that in this reſpect they are to be accounted firm; and therefore that unequal lengthning muſt needs change the figure of them on the forepart; and that by bending them there either upwards or downwards, or inwards or outwards, or diverſe ways.

This bending of the ribs here cannot be made either upwards or downwards, becauſe the ribs in regard of their

their latitude are unapt to be bowed either way. Add also, because that they are firmly restrained by the Intercostal Muscles in their position; so that without offers of violence to these Muscles, they can scarce be bent either upwards or downwards.

That that elongation cannot, or indeed very scarcely can bow the rib inwards, may thus be proved; because, the greatness of the Liver is repugnant to such a motion. For we have proved before, that the greatness of that bowel doth somewhat lift up the bone of the Stern outwardly or forwardly. Then the very figure of a Circular rib doth evidently contradict the inward making of any plication or bending. Lastly, because that elongation doth not many ways bend the ribs, it may from thence also be inferred, that such a bending would infer a compound Figure, and should necessarily contain some of the simple figures before rejected.

Wherefore we conclude, that that unequal length of the ribs on the forepart, must needs change their outward Figure, elevating the bone of the Stern, and then pointing forwards the Figures of the Breast (otherwise almost even.) The following Scheams do lively express the manner of it.

Let

Let A be the Bone of the Stern, B the turning Joynts of the Back, C and D the two oppoſite Ribs, which as we have ſaid do make a kind of Ring. Therefore if the forepart of the Ribs; namely, between C and A, and between D and A be lengthned, and yet the parts between C B and D B are no way anſwerable to this elongation, the figure of the Ring muſt needs be outwardly changed. Therefore ſeeing that the Rib is (as we have already ſhewed) unapt to be bent either upwards or downwards, or inwards, it muſt needs be outwardly bowed, as it is expreſt in the ſecond Figure, where the ſtern A by reaſon of the elongation of the part of the Rib C A and D A is repreſented, as if it were outwardly pointed, which is the very vitiated Figure of the breſt in this Diſeaſe.

Beſide the cauſes of the narrowneſs of the breſt hitherto commemorated, we can here add the ſmall increaſe of the Ribs between C and B, and alſo between B and D. For the Juſt Latitude of the breſt doth chiefly depend upon a due augmentation of thoſe parts of the Ribs. For if thoſe parts of the Ribs do grow to a juſt length, they muſt neceſſarily dilate the breſt unto the ribs almoſt in a juſt proportion, that little of the narrowneſs only being taken away, which the former cauſes alone were able to introduce. For by how much the more thoſe parts of the ribs are lengthened, by ſo much the more alſo the Lateral part of the rib D and the part C will be diſtant from the back bone B, and will make the breſt ſo much the broader. On the contrary, when upon the increaſe of the other parts of the body, thoſe parts of the Ribs are but little, or not at all augmented, they muſt of neceſſity be laterally leſs diſtant from the center of the breſt then is meet, and therefore the breſt muſt

be

be straightned towards the sides. For the sides of the rib C and D are so much the less distant from the Back-Bone, and the center of the Breast, as the parts of the Ribs between C B and D B are less lengthned. And let these things suffice to have been spoken concerning the narrowness and acumination of the Breast in this affect, With which we put at last an end to this disquisition of the Organical vices occuring in this Disease.

CHAP. XIV.

The Secondary Essence of this Disease in the Animal Constitution.

HAving put an end to the examination of the Natural and Vital Constitution, vitiated in this affect; it now remaineth that we make enquiry into the Animal Constitution. And we have already affirmed, that no primary fault doth here occur, and that it is a part of the primary Essence of this Disease. But whether there lurk in it any secondary vice, that we shall now examine.

But seeing that neither the Ancients nor the Modern Writers, who have written of the Animal Faculty, have made any mention of the Animal Constitution, nor indeed so much as once attempted a description of it: It may very justly be expected from us, who acknowledge such a Constitution. And seeing some wise men do dissent from that description, which may be deduced from the

the opinion of Antiquity, and the common opinion concerning the Animal faculty, and otherwiſe expounding the matter, do ſubſtitute a ſomewhat different deſcription, we thought good to offer both to the Readers conſideration.

According to the former and vulgarly received opinion and deſcription of the Animal faculty, the animal conſtitution is that affection of the Body, which conſiſteth in the generation and due motion of the Animal Spirits. Now by the due motion of the Animal Spirits, they underſtand the excurſion of them from the Brain thorow the Nerves like lightning, and again their recourſe back to the Brain, whereby they declare unto it what is perceived by the Organs of the outward Senſes.

Others (as we have ſaid) do otherwiſe explicate this matter. They grant indeed that the Animal conſtitution doth include the generation and diſtribution of the Animal Spirits, but they Say, that that ſwift motion of the Flux and Reflux of the Animal Spirits like lightning, is inconceivable in the Nerves, and if it be not unprofitable, yet certainly it is very little neceſſary to eſtabliſh the animal faculty. But inſtead of this they ſubſtitute in time of waking a certain contractive motion, of a moving endeavor of the very ſubſtance of the Brain, of the Spinal Marrow, of the Nerves ariſing from thence, and of the parts into which they are diſtributed. And this motion or endeavor produceth (ſay they) a certain Tenſity in the aforeſaid parts, by whoſe force all the alterations imprinted in thoſe parts by any objects, are communicated to the Brain. For as in a Harp when the ſtrings are ſtretched to a juſt pitch, if they be ſtricken in the moſt gentle manner at either end, that motion in a moment, at

leaſt a Phyſical one runneth to the other end; ſo they likewiſe affirm, that any Nerve being moved which is duly ſtretched without the Skull, that motion is extended to the Brain it ſelf, by reaſon of the continuity and Tenſity of the ſaid parts, and there fixeth a certain impreſſion conformable to the cauſe thereof. But in time of ſleep they ſuppoſe the Brain, the Spinal marrow, and ſome of the Nerves to be ſomewhat looſned. And indeed they ſay perpetually and ſimply, that the foremoſt connexions of the Spinal Marrow with the Brain remain looſe continually during ſleep; but they grant, that the hindermoſt connexions with the *Cerebethi* are ſomewhat extended, as in Night-walkers, and ſo by that means they do in ſome ſort diſcern outward objects, but they judge not of them by common ſenſe, but as it were reflected from the memory to the Fantaſie, Neither do they ſuppoſe it neceſſary, that all the inferior parts of the Spinal Marrow, and therefore the Nerves from thence proceeding ſhould be perpetually looſned during ſleep: ſeeing that moſt Birds ſleep ſtanding upon their feet; ſeeing that reſpiration in time of ſleep doth preſuppoſe the Tenſity of ſome Nerves; and laſtly, ſeeing where ſleep firſt ſteals in, the uppermoſt Nerves are wholly looſned before the neathermoſt. As for Dreams they conceive, that they proceed from a various and chanceable agitation and commixture of divers impreſſions treaſured up in the memory, which are now again freſhly perceived, by reaſon of a retained Tenſity in ſome parts of the Brain. But when in deep and profound ſleeps no dreams are repreſented, then they ſay, that the whole Brain is looſned.

Now whether the former opinion or this later be moſt agreeable to truth, for the preſent we do not much care; Neither do we here undertake to determine this Contro-

Controverſie, ſeeing that the Animal faculty doth exerciſe his function both waies from the ſame cauſes, and that the ſecondary vice doth happen by this affect in the Animal Conſtitution almoſt after the ſame manner. For firſt, as for the generation of the Animal Spirits, whether the former or the later opinion be true, it will be all one; becauſe we find no fault in the Brain (unleſs perhaps ſome other Diſeaſe be conjoyned) wherein each opinion ſuppoſeth the Animal Spirits to be generated. For we have ſhewed above, that the Head ought not to be numbred among the firſt affected Parts, and that the internal and proper actions thereof are not vitiated in this Diſeaſe. Then ſecondly, As for the diſtribution of the Animal Spirits, whether it be perfected backwards and forwards by that rapid and ſudden motion like lightning, or by a motion only made forwards, and that too gentle and ſlow, commonly the ſame fault occurreth in this Diſeaſe.

For firſt, Seeing that that ſuppoſed rapid motion of the Animal Spirits is cauſed by their paſſage into the firſt affected Parts, namely, through the Spinal Marrow without the Skull, through the Nerves from thence proceeding, and through the parts into which thoſe Nerves are diſtributed; and ſeeing that all theſe parts in this affect do labor with a cold diſtemper, with a paucity and dulneſs of inherent Spirits, the due ſwiftneſs of that motion muſt needs be ſomewhat retarded. For a cold diſtemper, as alſo a benummedneſs and penury of Spirits are repugnant to any motion, excepting a conſtrictive; ſome may ſay, that the opinion propounded in the firſt place doth ſuppoſe a wonderful activity and ſubtilty of the Animal Spirits, whereby they can eaſily overcome this repugnance. But, however it may be, ſeeing that the parts re-act through which the Spirits have their paſſage,

and labor to communicate their coldneſs and dulneſs to them, they muſt needs in ſome degree retard that activity of the Spirits, leſſen their ſubtilty, and ſomewhat intercept that expedite tranſition. Wherefore this opinion being ſuppoſed as true, the Animal Conſtitution will be vitiated in this affect, in regard of the retundation of that motion of the Spirits. And that ſecondarily, ſeeing that this motion is not interrupted by the primary fault of the Animal Spirits, but by the fault of the firſt affected Parts, as hath been ſaid in like manner in the Opinion laſt propoſed, wherein the motion of the Spirits is ſuppoſed to be peaceable and gentle, they muſt needs whilſt they are ſomewhat ſlowly tranſmitted through the firſt affected parts, contract ſome vitioſity from the depraved inherent Conſtitution of thoſe parts, for the ſame Reaſons which we alledged in the Queſtion immediately preceding. It will be therefore according to this Opinion alſo, a Secondary vice in the diſtribution of the Animal Spirits.

Again, As for the Tenſity of the very ſubſtance of the Brain, of the Spinal Marrow, of the Nerves and the Nervous parts in time of waking, which is ſuppoſed in the latef Opinion before propounded, there muſt needs be ſome defect of a due Tenſity in the Spinal Marrow without the Skull, in the Nerves ariſing from thence, and in the parts unto which they are diſtributed. For firſt, A cold and moiſt diſtemper is repugnant and adverſe to that due Tenſity, ſo alſo is that dulneſs and penury of inherent Spirits; wherewith the Parts are without controverſie rendred ſlothful, and leſs apt to perform the Animal Actions; the contrary whereof happeneth, when the aforeſaid parts obtain their due Tenſity. Secondly, It is manifeſt by what hath been ſaid, that the Tone of theſe parts is ſomewhat vitiated in this

affect,

affect, by reason of their exceeding looſneſs, ſlipperineſs, ſoftneſs, weakneſs and internal lubricity, which qualities do moſt evidently enfeeble the juſt Tenſity of the ſaid Parts. Although therefore that the Brain in this affect do for his part yield a due and juſt influx, yet it is ſcarce poſſible, nay it is altogether impoſſible that it ſhould communicate that Tenſity in a ſufficient degree to the Spinal Marrow without the Skull, to the Nerves from thence proceeding, &c. becauſe of the diſtemper, benummedneſs and penury of the inherent Spirits. Thirdly, The Symptoms in this Diſeaſe that relate to the Animal faculty do moſt clearly confirm the ſame thing. For Children afflicted with this Diſeaſe do from the very beginning thereof (if they be compared with others of the ſame age) move and exerciſe themſelves very weakly, and are leſs delighted in manly ſports: but upon the progreſs of the affect, they are averſe from any vehement motion, as they ſtand upon their feet, they reel, wave and ſtagger, ſeeking after ſomewhat to ſupport them, and can ſcarce go upright; neither take they pleaſure in any play, unleſs ſitting or lying along, or when they are carried in their Nurſes Arms: Finally, the weak Spine is ſcarce ſtrong enough to bear the burden of the Head, the Body being ſo extreamly extenuated and pined away. All which things do abundantly demonſtrate that the Tenſity of the parts ſubſervient to motion is leſs rigid in this affect than is juſtly requiſite in time of waking. If therefore that due Tenſity in time of waking be a part of the Animal Conſtitution, which we here ſuppoſe, that being vitiated muſt without all doubt neceſſarily conſtitute a Diſeaſe in the Animal Conſtitution; and ſeeing that this fault hath no primary dependance upon the Brain it ſelf, but upon the inherent Conſtitution of the firſt affected parts, it

ought in all Reason to be reputed a Secondary fault in respect of the Animal Constitution.

Yet here we meet with a scruple. Some may demand, *why the sense as well as the faculty of motion is not vitiated in this affect?* The reason is plain, a far greater tensity, strength and vigor of the Nerves is required to exercise the motive then the sensitive faculty. For almost the gentlest motion of the Nerves is sufficient for sense, but not for motion. So you may observe in the motion of any Joynt, that the Muscles which move it are very hard and stiff, but that hardness being remitted, yet the sensation is easily performed. Nor doth that any way hinder, because that sometimes in the Palsy the sense is somewhat stupified, and the motion remaineth: for the Palsy is an affect very different from this; for in that the primary fault resides in the very Animal Constitution, therefore it may so fall out, that both the sense and the motion may be equally affected. Besides, when perhaps one Nerve doth want the due influx of the Brain and another which is extended to the muscles of that part doth enjoy it, it may be, that for this cause also the sense may be abolished, and yet the motion may continue; although this case is not so frequent, and that the motion is more usually taken away, the sense remaining. But we have said enough concerning this matter. And thus at length we have produced those things which we have meditated of the integral Essence, both primary and secondary of this Disease; and that with as much perspicuity as a matter so difficult and unsearcht into would bear: In the next place we shall address our selves to the examination of the causes of this Disease.

CHAP.

CHAP. XV.

The Cauſe of the Rachites. *And firſt thoſe things which concern the Parents.*

WE have largely explained above both the Primary and Secondary Eſſence of this Diſeaſe. And indeed we have ſufficiently demonſtrated in the ſame place, the dependance of the ſecondary upon the Primary Eſſence. It may not therefore be here expected, that we ſhould again purpoſely and in particular diſcuſs the cauſes of the ſecondary Eſſence, which we have handled before. It may ſuffice, that we have found out the cauſes of the ſecondary Eſſence. Yet if any cauſe do occur which at once hath an influx as well into the primary or ſecondary Eſſence of the Diſeaſe, we ſhall not refuſe to take notice of it by the way as we proceed.

But omitting all diligent ſearch into the ſeveral kinds of cauſes, we purpoſe to contract this our diſcourſe chiefly to two heads. The former containeth the Infirmities and the diſeaſed diſpoſitions of the Parents, which perhaps have ſo great an influence upon the Children, that they ſuppeditate at leaſt a proneſs to this affect, and infer an aptitude to fall into it, if they have not actually fallen into it from their very birth. The later comprehendeth the acceſſary cauſes of this Diſeaſe; namely, thoſe which happen to children after their birth.

Concerning the cauſes of the firſt kind we meet with a Queſtion at the firſt entrance: *How and whether this Diſeaſe may be ſaid to be hereditary?* That we may the more ſucceſsfully proceed in the determination of

this queſtion, an hereditary Diſeaſe muſt be diſtinguiſhed into that properly, and that improperly ſo called. And indeed an hereditary Diſeaſe properly ſo called, is ever ſuppoſed to be pre-exiſtent in both or one of the Parents, and from thence to be derived to the Progeny. But an hereditary Diſeaſe, improperly ſo called, is not ſuppoſed to be pre-exiſtent in the ſame kind, either in both or one of the Parents; yet the ſame fault muſt always neceſſarily precede (perhaps altogether of a different kind) at leaſt in one of them, by vertue whereof a certain diſpoſedneſs is imprinted in the children, whereby they are made obnoxious to fall into this improperly hereditary Diſeaſe.

Moreover, An hereditary Diſeaſe properly ſo called, is twofold; either in the conformation, as when a lame Perſon begets a lame; a deaf Father, a deaf Son, or a blind a blind; or in the ſimilary Conſtitution: as when a Gowty Father begets a Gowty Child. It is to be noted, that in the firſt kind there is an hereditary fault inherent in the firſt affected parts of the Conformation. But in the later, there is no neceſſity that a Diſeaſe of the ſame kind with the Diſeaſe of the Parents, ſhould be actually inherent in the *Embryon*, from the firſt formation. But ſuch a diſpoſition imprinted by one or both of the Parents is ſufficient, which as the life is lengthened may be actuated into the ſame, by the concourſe of other intervening cauſes. Again, an hereditary Diſeaſe improperly ſo called, may be likewiſe twofold; namely, either in the Conformation, or in the ſimilary Conſtitution. In the formation, as when neither of the Parents is blind, pore-blind, lame, &c. yet have begotten a Son blind, pore-blind or lame, by the very fault of the formation. For in theſe caſes, that very fault which is ſenſible and conſpicuous in the Iſſue, flowed from ſome fault in the Parents, although perhaps of a different

kind

kind, and so it may be called, though improperly, an hereditary Disease. In like manner in the similary Constitution of the Issue, there may reside an hereditary Disease, improperly so called, as when a Melancholy, sedentary, or an intemperate Parent begetteth a Child subject to the gowt or the *Cachexia*, although perhaps the Parent was never troubled either with the one or the other.

These things being thus premised, we approach nearer to the resolving of the Question. And first, we affirm that this Disease is not comprehended under the former species of an hereditary Disease, properly so called. For that consisteth in the formation: but this Disease according to its primary Essence, is a similary Disease, as we have before demonstrated, and very rarely bewrayeth it self from the very Birth, much less from the very conception and formation. And for the same Reasons, we also affirm this Disease belongeth not to the former kind of hereditary Diseases improperly so called. Which after a like manner consist in the formation of the parts, and are begun presently after the first formation.

Secondly, We say, that so it may come to pass, that this Disease may fall under the second species propounded, of an hereditary Disease properly so called; namely, that which consisteth in the similary Constitution. Yet we cannot affirm this as certain and undubitable, because the Children which we have hitherto known to be afflicted with this Disease, have not lived to such maturity of years as to beget Children: and therefore we cannot otherwise suppose, then by probable conjecture, whether or no their progeny should be infected with this affect, as it were by right of inheritance.

Thirdly, We say, that in many Children this Disease doth directly fall under the second species of an hereditary

ry Diſeaſe, improperly ſo called. For according to the primary Eſſence of it, it is a ſimilary Diſeaſe, and although it hath not yet been ſo long and ſufficiently diſcovered unto us, that we can determine the effects of it, how they will operate in the Progeny, yet frequently in the preſent progeny we have obſerved certain Rudiments of this affect to have been derived to many from one or both of the Parents. So that although neither of the Parents were in their infancy or child-hood afflicted with this Diſeaſe, yet ſome proneneſs and diſpoſedneſs to this Diſeaſe hath preſently appeared in their little Infants, eſpecially in thoſe whoſe Parents before coition were pre-diſpoſed by ſome vitioſity of body, or error of life, to tranſmit this pollution to their Iſſue; but thoſe defilements of the Parents which diſpoſe them to propagate Children obnoxious to this affect, we ſhall by and by reckon up in their order; from whence alſo a higher confirmation of this aſſertion may be deduced.

Fourthly, We ſay, although the affects of the Parents do frequently imprint a certain propenſion in the Iſſue to fall into this Diſeaſe, ſo that this Diſeaſe may be therefore reputed in the ſecond acception of an hereditary diſeaſe, improperly ſo called; yet it very rarely happneth, that this Diſeaſe doth actually break out before the birth of the child. One amongſt us atteſteth, that once, and only but once, he ſaw a Child new born invaded with this Diſeaſe. And in this Child the Back-bone and the neck were ſo weak, that they could not ſuſtain the weight and greatneſs of the Head, within three moneths after it was born, the Child dyed. Whereby it is apparent, that he was grievouſly affected. It ſeemeth conſpicuous by what hath been ſaid, that Infants, however they may frequently borrow from their Parents a diſpoſedneſs to this affect, are moſt rarely and ſeldom troubled with it before

before they are born, but if at any time they are so prematurely afflicted, that then the affect is most vehement and grievous. Now a reason of the event of both these may be demanded. To the former therefore we say, that this Disease doth partly consist in a cold distemper of the first affected parts, and indeed an unequal one, as namely, being very cold in the said parts, respect being had to the temper of the Head and the Bowels: and that hereupon that unequal coldness of those parts is of great moment in this Disease, and that also in respect of the very inequality. For this contributeth much to that unequal and deficient distribution of the Vital Blood to the parts first affected. Seeing therefore at such time when the *Embryon* is carried in the womb, this inequality of the temperament of the first affected parts may be much corrected and averted by an equal heat, whereby the womb may on every side embrace and cherish the body of the *Embryon*; it followeth, that the gestation doth very much drive away this Disease, at least retard the invasion of it. For the body of the Womb being all about equally warmed with an even heat, and equally embracing and cherishing all the parts of the *Embryon*, doth not easily permit one part to wax colder then the rest, and by that means to be cherished with a defective and sparing afflux of the Vital Blood. Wherefore seeing that that very inequality of heat and comfort are Essential pars of this Disease, and without which this Disease cannot consist, it is no wonder that the womb strongly resisting these parts of the Disease, and the invasion thereof, doth for the most part protract it, at least during the impregnation.

As for the later part of the question propounded, namely, *why Infants, who before their birth were infested with this Disease, are more grievously and dangerously afflicted?* We say, according to that *Aphorism* of *Hypocrates*

crates, that a Diſeaſe which holdeth the leaſt congruity with the condition of the Diſeaſed, is more dangerous then the contrary; as a Feaver threatneth more danger to an old man than to a young, and in the winter then the ſummer. For a Diſeaſe that hath ſome correſpondence and conformity with the condition of the Diſeaſed, requireth a ſlighter cauſe for its introduction: but that which is contrary thereunto, argueth the magnitude of the cauſe, which, notwithſtanding reſiſtance and oppoſition, will produce his effects. In the preſent Diſeaſe, therefore if the equal and impartial heat of the womb cannot reſtrain the propenſity of the *Embryon* to this affect, but it will fall into it, ſome vehement cauſe muſt needs be imprinted by the Parents, and the ſeminal Principals extreamly weakned. Therefore there is little hope when the *Embryon* laboring with this Diſeaſe is born, neither will a prudent Phyſitian attempt the cure without ſome Prognoſtick of imminent danger. Moreover, inſtead of a *Corollary*, we ſubſtitute another Rule, having ſome affinity with the former, although perhaps it be not yet certain and approved; namely, that Children by how much the ſooner after their birth they are invaded with this Diſeaſe, ſo much the more difficultly (*cæteris paribus*) are they delivered from it. And let theſe things ſuffice concerning the Queſtion propounded.

We will now apply our ſelves to the diviſion and reckoning up of thoſe cauſes which on the Parents parts may produce this Diſeaſe. Some of theſe faults in the Parents relate to the Generation of the ſeed, whereof the *Embryon* conſiſteth, others have reference to the *Embryon* now conceived, and yet born about in the Womb. The faults of the Generation of the ſeed proceed either from the man or the woman or from the whole Body, or from thoſe parts onely which are dedicated by nature

nature to Generation. The faults of the Parents depending upon the whole Body have the ſtrongeſt influence into the Child, becauſe it tranſmitteth ſuch matter to the Generation of the Seed, as is unapt for thoſe parts dedicated to that office. We purpoſe not here to particularize the ſeveral faults of the matter of the Seed, but to inſtance in thoſe alone, which conſpire to entitle the Progeny to this Diſeaſe. Theſe we reduce to four Claſſes,

The firſt Claſſis containeth a cold and moiſt diſtemper of the matter, whereof the Seed is Generated. This chiefly reſulteth from a cold and moiſt diſtemper of the Parents, unto which we alſo refer a predominancy of ill juyce, eſpecially that which is *Phlegmatick* and wateriſh, alſo a *Cachexia* and *Dropſy*, and perhaps the Green-Sickneſs, which ſome call the white Feaver, not ſufficiently ſubdued before conception; all which affects manifeſtly help to conſtitute a wateriſh matter, both cold and moiſt in the Genital Parts, which is not onely in general leſs apt for the Generation of the Seed, but it particularly inclineth to a condition of this Diſeaſe; a part of whoſe primary Eſſence conſiſteth in that very cold and moiſt diſtemper, as we have already proved. Moreover, we may perhaps hither reduce the Scurvy, the *French Pox* and the Jaundice, in which affects the Blood alſo is polluted with filthy excrementitious humors, and corrupt exulcerations, which cannot eaſily be changed into laudable and fruitful Seed.

The ſecond Claſſis containeth the penury of Natural Spirits, whereby the good Seed ſhould be Generated. For a Spirituous Seed cannot flow from ſuch a kind of matter. The cauſes which ſuppeditate that impure matter to the Parts of Generation are the dried and extenuated Bodies of the Parents, waſted either by long

long abſtinence, or by ſome vehement evacuation, as by Vomits, Lasks, Lienteries, Dyſenteries, Hepatical Fluxes of long continuance; by an exceſſive *Hemorrhage* from any part, by violent ſweatings, or any Chronical Diſeaſes which waſteth the ſtrength, and is not repaired before Coition: eſpecially a Conſumption, a Hectick Feaver, an indigeſtion from any kind of Cauſe. Laſtly, from a defective and imperfect Concoction of the laſt aliment, or the fault of any part. For in ſuch caſes the matter which is ſeparated to the parts ſubſervient to Generation, is deſtitute of a competent plenty of Natural Spirits, whereupon the Parts preparing and concocting the Seed, cannot perfectly correct this defect, and ejaculate ſuch Seed as is ſufficiently abounding with Spirits. Seeing therefore that a conſiderable part of this Diſeaſe conſiſteth in the paucity of Natural Spirits, it cannot otherwiſe be, but that the iſſue propagated by ſuch a crude and almoſt Spiritleſs Seed ſhould be tainted with a certain Natural Propenſion to this affect, even in their firſt rudiment, which afterwards upon the concurrence of other cauſes, is eaſily deduced into Act.

The third Claſſis containeth the benummedneſs or ſtupour of the matter tranſmitted to the Generative Parts, whereof the Seed is produced. For not only the ſolid parts, but alſo the whole Maſs of Blood, and the humors therein contained are obnoxious to that ſame ſtupour. And from hence it is, that Phyſitians being to render the cauſes of Diſeaſes, do uſe to ſay, that the humors and alſo the Blood are too fluid and moveable, and unduly vehement; ſometimes on the contrary, that they are unapt for motion, leſs fluxible, and unactive beneath a Mediocrity, & in reſpect of this thing alſo a certain Mean is moſt wholſome: but more things relating hither, may be ſeen above. We will here only proſecute thoſe faults

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of the Parents from whence this defect of vigor and activity in the matter of the Seed doth arise. These therefore are first the soft, loose and effeminate Constitution of either or both the Parents, indisposed to strong and Masculine exercises. Secondly, an overmoist and full diet and epicurism, obnoxious to frequent crudities. Thirdly, A delicate kind of life abandoned to ease and voluptuousness, slothful, and rarely accustomed to labor, danger and care. Hither you may also refer a total defect of manly Exercise, immoderate sleep, especially soon after meate, and any kind of sleepings whatsoever, a sedentary, speculative life, intent upon soft and queint Arts and Sciences, as Poetry, Musick, and the like; to these may be further added, a daily frequenting of Comedies and other Plays, an assiduous reading of Fables and Romances, and instead of manly and laudable Recreations, a loose expence of time in Carding and Dicing. Hitherto also belong the never failing fruits of lasting peace and plenty, such as security, indiligence, and the like. All these enumerated faults do manifestly contribute a share to introduce a laziness and Effeminateness in the parts. Seeing therefore that the Blood, together with the humors contained in it, doth in its circulation wash all those stupified parts, it cannot otherwise be, but that as it glideth along, it must participate some such alteration; and seeing that some portion of the transient Blood affected with this stupifaction, is transmitted to the Generative Parts, with the very matter whereof the Seed is Generated, it is easie to infer that that Child which springeth from such principles must inwardly contract at least some propension conformable to the sluggishness and stupour of its Native matter, and that that propension after Birth, when the preservation is taken away by the equal cherishings

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of the Womb, is by divers cauſes without difficulty deduced into act, wherefore ſeeing that ſuch a dulneſs is a part of the Primary Eſſence of this Diſeaſe, it followeth that in ſuch vitiated principles there lurketh a propenſity to this affect, derived from one or both of the Parents.

The fourth Claſſis containeth the vitious Diſpoſitions (if any ſuch occur) of the Parents, who in their Childhood were infected with this Diſeaſe. For theſe would tranſmit into the Children a continuation of an hereditary Diſeaſe properly ſo called. But becauſe, as we have ſaid, it is not yet manifeſt whether the Parent afflicted with this Diſeaſe in their infancy ſhall beget Children therewith affected; beſides, becauſe the faults of the Parents may be conveniently referred to any one of theſe Claſſes aforeſaid, or to many, or indeed to all of them, it will be fruitleſs to inſiſt longer upon them. Therefore having reckoned up the faults of the Parents which depend upon the whole Body, in the next place we proceed to their faults which peculiarly reſide in the Genital Parts.

Theſe faults are ſometimes a cold diſtemper, ſometimes a moiſt, when by reaſon of too much humidity they are looſned or weakned, whereupon they ejaculate either an unfruitful Seed or ſuch as is propenſe to this Diſeaſe, ſometimes thoſe parts are infeſted with a virulent, vitious or wateriſh *Gonorrhea*, and they excern a Seed not ſufficiently elaborated; the ſame muſt be ſaid of the white and red Fluxes of Women. Again, ſome things outwardly applied to thoſe parts have reference hither; as Oyntments of Hemlock and other *Narcotical* things, eſpecially if they be often anointed with them, in like manner, Oyntments that are incorporated with white or red Lead, Chalk of Lead, Litharge, Sugar of Saturn

and

and the like, daily and for a long time adhibited to those parts. For such as these blunt the activity of the inherent Spirits in those Parts, and introduce a certain dulness in them, which being communicated to the Seed prepared in them, disposeth the progeny to this affect.

At length we have finished our intended enumeration, if not of all, yet at least of all the most principal causes which happen before the Conception about the Generation of the prolificative Seed, and have any concurrence to produce this Disease, or to dispose to the production thereof. Now follow the faults and errors of the Mother in the time she beareth the Embryon in her Womb, which also must be reputed among the causes of this Disease before the Birth.

First, there hapneth a cold and moist distemper of the Womb it self, which (as were we silent, is easily manifest to every one) may most readily be communicated to the Embryon by the perpetual contact of the Womb.

In the Second place, All those things offer themselves which suppeditate to the Embryon crude and impure Juyces converted by excrementitious and corrupt humors instead of laudable aliment. Hitherto principally belongeth the unwholsome and prepostrous diet of Women with Child, especially inclining to moisture, coldness, and the heaping together of crudities. The same things also happen by the imperfection and defect of the first or second Concoction, especially when they are not excerned by vomit or some other evacuation of the Crudities from thence proceeding, but are at length transmitted with the Mothers Blood for the aliment of the Embryon. Besides, if a moist and cold Disease, as a cold and moist distemper with the matter, an ill di-

geſtion, a *Cachexia* or Dropſie, &c. do invade a woman with Child after Conception, it may thereupon eaſily happen, that the impure aliment alſo which nouriſheth and cheriſheth the Seeds of this Diſeaſe, be diſpenſed to the *Embryon*.

In the third place are to be reckoned all thoſe things that defraud the *Embryon* of due aliment, as any exceſſive evacuation, eſpecially a laſting flux of Blood in any part; alſo a raſh opening of a Vein, or *Phlebotomy* that exceeds in quantity. The ſuckling of another child may alſo divert the afflux of ſufficient aliment from the Womb towards the Breſts. Hitherto likewiſe belongeth inordinate faſting, or any indigeſtion in the Mother, any inappetency after meat, or defect of concoction. Moreover, *an acute Feaver hapning to a woman with Child*, beſides other inconveniences, may alſo defraud the Child of due aliment; ſo alſo an Hectick Feaver. All theſe things do not only infer to the *Embryon*, a dejection of Vital Spirits, and a defective nouriſhment, but alſo they cauſe a want of natural Spirits. For the Natural Spirits are waſted and diſſipated without due nouriſhment, and are alſo deſtitute and diſppointed of neceſſary reparation. Seeing therefore that a part of the Eſſence of this Diſeaſe conſiſteth in the defect of Natural Spirits, ſome diſpoſition to this affect muſt needs be bequeathed to the off-ſpring from the cauſes aforeſaid.

Fourthly and laſtly, exceſſive ſleepineſs of women with child, ſlothfulneſs, eaſe, any vehement labor and exerciſe after Conception, do alſo contribute their ſhare. For although violent motions and actions of any kind are forbidden to women in ſuch cauſes; yet moderate labors, watchings and exerciſes which offer no violence to the womb, or provoke to abortiveneſs, do not only conduce to the health of the Mother, but in ſome degree they drive away

away that dulneſs from the *Embryon*, and augment the heat, vigor and activity of it. And thus we put an end to the firſt Chapter of the cauſes of this Diſeaſe before the Birth. Thoſe which happen after the birth ſhall be the ſubject of our next examination.

CHAP. XVI.

The Cauſes of this Diſeaſe incident to Children after their Birth.

WE have noted in the precedent Chapter, that Infants from their firſt Origine are ſeldom afflicted with this Diſeaſe, but by reaſon of the Cauſes there rehearſed, that they are frequently affected with a natural diſpoſedneſs and propenſion to the ſame. We ſhall now proſecute thoſe cauſes which are apt to actuate that Natural diſpoſition after the birth, or newly and fully to produce this Diſeaſe. For it muſt be known, that the ſame cauſes which may actuate that pre-diſpoſedneſs to this Diſeaſe, may produce this Diſeaſe a new, if they be ſufficiently intenſive in their degree. And therefore we confeſs, that thoſe children which are prone to this Diſeaſe from their Nativity are eaſily affected; but that other which are free from all Natural corruption fall not into the ſame but upon more potent cauſes; and yet thoſe cauſes are the ſame for their kind, and differ only in the degree. We therefore thought it needleſs to ſpeak of theſe things diſtinctly and apart: it

may ſuffice that we have ſpoken of them indiſcriminately and together.

At the very entrance, a Queſtion there is which importunes a Reſolution; namely, Whether Contagion may be numbred among the cauſes of this Diſeaſe, and therefore whether this Diſeaſe in a proper and right underſtanding be a contagious Diſeaſe, indeed he that conſidereth this Diſeaſe unknown to the Ancients, how it firſt invaded the Weſtern Parts of *England*, and in few years hath been ſince diſperſed all *England* over, will at the firſt thought eaſily judge it to be contagious; and to have been ſpread ſo far and wide by the infection of it. But the matter will ſeem to be otherwiſe to him that will conſider it more intentively. For although this Diſeaſe may in ſome manner endeavor to imprint an affection like unto it ſelf in other Bodies, yet it ſcarce advanceth ſo far, that it can totally produce a Diſeaſe of the ſame kind. For perhaps it may in one ſome ſlight inclination in another Body, yea, ſometimes perhaps it may accelerate or haſten the invaſion of an affect in a Body highly pre-diſpoſed unto it, yet it cannot therefore deſerve the Name of a Diſeaſe properly contagious. For all Diſeaſes conſpire to change and aſſimilate thoſe Bodies which are neareſt to themſelves, yet that is not ſufficient to denominate Diſeaſes contagious. For to conſtitute a contagious Diſeaſe properly ſo called, it is further required that out of it ſelf it propagate a certain Seminal fermentation of it ſelf, which ſecretly inſinuating it ſelf into other Bodies, may by degrees introduce into thoſe Bodies a Diſeaſe of the ſame Species. But this Diſeaſe containeth no ſuch fermentation in its eſſence, neither is it ſecretly propagated by a precedent emiſſion of Seed from it ſelf which may imprint a Diſeaſe of the ſame Species in the adjacent Bodies.

dies. For we have already often ſaid, That the firſt eſſence of this Diſeaſe conſiſteth in a cold and moiſt diſtemper, and in a dulneſs and paucity of inherent Spirits, which affections if they endeavor to aſſimilate any Bodies that are near them, they attempt and undertake it by open violence, and not by ſnares and fraudulence, or a pre-immiſſion of ſecret little fires. In like manner, if you reflect upon the Secondary Eſſence thereof, neither the vitiated Tone, nor the depraved Vital nor Animal Function, nor the Organical faults are found apt and fit in this affect to inſinuate themſelves into other Bodies, and to propagate their own Species. Finally, if we will conſult experience, the matter will quickly be vindicated from all doubt. For we frequently obſerve Children either of the ſame age, or very near to the ſame age, be brought up in the ſame Houſe, whereof one or other of them is perhaps afflicted with this Diſeaſe, whilſt a third or many amongſt them do eſcape it. Yea. We have known Children not only educated under one common Roof, and delighting in the continual and mutual ſociety of one another, but daily meeting at one Board, and lying together in one Bed; whereof one who hath been ill affected with this Diſeaſe, hath not infected any of his companions either by feeding or lying together. Which could ſcarce poſſibly happen in a Diſeaſe properly contagious. Wherefore Contagion being excluded from the Catalogue of this Diſeaſe, we will addreſs our ſelves to the finding out of ſuch as are more true and unqueſtionable. We divide the cauſes which produce this Diſeaſe after Birth into two Claſſes. The firſt containeth the errors which procure it in the uſe of the ſix non-natural things. The later comprehendeth the precedent Diſeaſes of divers kinds, which are wont very often to leave behind

them some Inclination to this affect.

As for the former Classis concerning the abuse of the six non-Natural things, so far as they relate to this Disease, seeing that children are seldome discomposed with any vehement passions of the mind, and can thereupon very difficultly fall into this Disease. Again, in regard that the use of Venery appertaineth not unto them; we will reduce and limit these cases to the five subsequent heads. To the Air, also to what things soever extrinsecally occur, or are applyed to the body, to meat and drink, and such things as are inwardly received, to motion and rest, to the kind and manner of life, to actions and exercise, to sleep and watchings; lastly, those things which are preternaturally retained in, or severed from the body. These several things we shall examine in the propounded order with all convenient brevity.

Of the Air, and such things as happen outwardly.

A cold and moist Air doth powerfully contribute to this Disease. For seeing that it doth more easily steal into the external and first affected parts in this Disease, then into the hidden and fenced bowels, it directly helpeth to imprint in those parts that unequal; namely, that cold and moist distemper. The constitution of this kind of Air, is chiefly predominant about the beginning of the Spring, at which time the Nurses ought to be cautious and circumspect, how they too confidently expose their children which are subject to this affect, to the injuries of the Air; as also when the Air is cloudy, thick, rainy, and full of vaporous exhalations. Hereupon places near the Sea, great Marishes that are obnoxious to much rain and showers, and fed with a great number of Springs, are wont to be (*cæteris paribus*) very fruitful of this affect.

In

In like manner houſes near the banks of great Rivers and Ponds or Meers are for this purpoſe condemned. Moreover, frequent bathing and waſhings with ſweet water, although they be applied actually hot, yet in regard that they are potentially cold and moiſt, they are alſo juſtly culpable; for they do in ſome ſort communicate their diſtemper unto the parts whereunto they are adhibited, and more or leſs cauſe a ſoftneſs and looſneſs in thoſe parts, and make the circulation of the Blood too ſlippery.

Hither we may alſo refer cold and moiſt liniments, as alſo ſuch as are looſe and ſlippery, being too often continued in that tender age, eſpecially about the Spine or the Origine of the Nerves: laſtly, ſoft linnen cloths, if they be not well dried, they cheriſh the roots of this Diſeaſe. For this cauſe amongſt others, it hapneth, that the Children of poor people are the leſs obnoxious to this Diſeaſe, becauſe namely, for the moſt part they are enwrapped in courſe cloths, and woolly integuments, each of which doth rub and tickle the parts thereby, exciting and augmenting the inward heat, and irritating a more copious afflux of the Vital Blood unto the habit of the Body, and are therefore very effectual to baniſh this Diſeaſe. But the ſoftned fine linnen doth neither irritate the heat into the external parts, nor laudably cheriſh it. For if they chance to be for ſome ſhort ſpace of time removed from the touch of the parts, they preſently looſe their warmth, and at the next touch they convey a ſenſe of coldneſs into the parts. Wherefore ſuch linnen cloths being in the number of thoſe things which are dedicated only to extrinſecal application, and ſeeing that they are hurtful by their ſole coldneſs and ſoftneſs, we have referred them to this firſt Claſſis of cauſes, & the firſt part thereof

which containeth cold and moiſt things outwardly occurrent.

In the ſecond place, the Air being infected with any particular infection, as noxious Metalline exhalations, which for the moſt part fight againſt the inherent Spirits of the parts, by a kind of venemous malignity, and do either extinguiſh them or drive away and diſſipate them; withall they diſſolve the Bone of the parts, and the pulſificative force, eſpecially in the parts external, where they firſt happen, they at leaſt diminiſh, if they do not weaken it, and affect it with a languidneſs. Theſe things are principally cauſed by exhalations from Lead, Antimony, Quick-ſilver, and the like. Moreover, Oyntments made of the ſame, are almoſt alike perillous, if the firſt affected parts be frequently and unſeaſonably anointed therewith; although perhaps theſe things do alſo belong to the fourth title of this Claſſis. Finally, we have obſerved ſome Children who have been anointed with *Mercurial* Unctions for the Scabs, to have fallen afterwards into this Diſeaſe.

In the third place, an Air vehemently hot and ſubtile, extreamly attenuant and diſſolvent, may likewiſe be numbred among the cauſes of this Diſeaſe, becauſe it allureth forth, diſſipateth and conſumeth the inherent Spirits. In like manner, hot liniments, and eſpecially diſcuſſive withall, Chymical Oyls diſtilled, and not ſufficiently corrected by the commixture of things temperate; for theſe in ſuch a tender conſtitution of the parts, do eaſily melt and reſolve the Spirits into a volatile and Airy thinneſs, and by conſequence infer a penury of Inherent Spirits. Hither alſo belong ſharp, ſaltiſh, hot and diſcuſſive Baths, eſpecially if they be unſeaſonably and unmeaſurably uſed, for theſe no leſs then the former do waſt and conſume the Spirits.

Fourthly,

Fourthly and lastly, An Air filled with *Narcotical* vapors or exhalations and baths, fomentations and *Liniments* made of *Soporiferous* and *Narcotical* ingredients, as Hemlock, Henbane, Opium, Nightshade, and the like, and externally applied, are very fitly reducible also to this Classis. For they easily introduce a benummedness into the first affected Parts, into which they first convey their force. Which benummedness is not only it self a part of the first Essence of this Disease, but it also easily dulleth and diminisheth the Vital influx in those parts, and consequently is also a cause of that part of the Secondary Essence of this Disease, which consisteth in the Vital Constitution, which thing we have already explained more at large. And thus much of things outwardly occuring.

Secondly, *Of Meat and Drink, and things inwardly taken.*

To this Title there belong first aliments of any kind which are too moist and cold, for these things manifestly cherish the distemper, wherein a part of the Essence of this consisteth. Hither therefore we refer most kind of Fish, and crude Meates which are not well prepared by Co-ition; also all those things whatsoever they be which cause a defect of concoction in the Ventricle. Therefore the feeding upon new Meat, before the former Aliment is concocted, is very hurtful for Children disposed to this affect; and in this respect, a plentiful Diet is altogether to be abandoned, and a thin spare Diet ought to be observed, for too liberal feeding doth overwhelm and choak the heat, and therefore must needs accumulate many crude and raw humors. And perhaps this one may be reputed among the especial causes,

ſes, why this Diſeaſe doth more frequently invade the Cradles of the rich, then afflict poor mens Children. In like manner cold and moiſt Medicines taken inwardly, and alſo ſuch as are laxative, and endued with an internal ſlipperineſs, do manifeſtly relate hither. For theſe things do not only infer a like diſtemper, but they produce a *Relaxation* in the *Tone* of the parts, and affect them with an internal ſlipperineſs; and in a word, they render the current of the Blood through the firſt affected parts over-ſlippery and eaſie.

Secondly, Nouriſhments that are too thick, viſcous and obſtructive belong hither, eſpecially becauſe they interrupt the equal diſtribution of the Blood. Hither we refer fleſh hardned with ſmoke, and ſeaſoned with much Salt; in like manner, Salt Fiſh and Cheeſe, almoſt of any kind plentifully fed on. Bread newly taken out of the Oven, and not yet cold; alſo almoſt all ſweet things condited with Sugar, unleſs they are withall tempered with Wine, or cutting or attenuant. Obſtructive Medicines likewiſe of any kind belong hither, unto which we may further add ſuch as are *Partotical*, and whatſoever being drank, induce a benummedneſs into the parts.

Thirdly, Nouriſhments that are of an extream hot and biting quality, ſharp and corroſive, as old and ſtrong Wines, eſpecially being drank upon an empty Stomach, Meats alſo that are ſeaſoned with much Pepper and aromatical ſawces, muſt be connumerated among the reputed cauſes of this affect: For theſe things in ſuch a tender conſiſtence of the Parts, do eaſily feed upon, and devour the inherent Spirits. The ſame thing is alſo affective by Medicines that are immoderately hot and diſcuſſive, yea, theſe are far more powerful to hurt, becauſe they more quickly and forcibly ſpoil the inherent Spirits, than the *prementioned* Nouriſhments.

Thirdly,

Thirdly, *Of Motion, Reſt, Exerciſes and Actions.*

Motion and Exerciſes, if they exceed a mean, they diſſolve the Body of a little Child into a profuſe Sweat, and withall they ſomewhat diſſipate the inherent Spirits of the Parts, and therefore for that reaſon they may conſpire the introducing of this Diſeaſe: although we conceive it falleth out exceeding rarely, that Boys are infeſted with this Diſeaſe, whereof we diſcourſe. But a defect of Motion, and want of Exerciſe doth moſt frequently, yea and moſt effectually concur to the production of this affect. For the Spinal Marrow, and the Nerves from thence ariſing, and the other firſt affected parts ſerve chiefly for Motion and Exerciſes. A ſtupidity therefore and ſluggiſhneſs of thoſe parts, is a cauſe that neither their inherent heat is ſufficiently cheriſhed, nor that heat extenuated, nor the cold diſtemper ſtealing in baniſhed, nor the excrementitious and ſuperfluous moiſtures expelled by a due tranſpiration, but it permitteth them to be affected with a certain ſoftneſs, looſneſs, and internal lubricity, whereupon the Arteries alſo diſtributed unto them are faintly irritated, yield a dull and ſlothful Pulſe, neither do they render the parts ſomewhat turgid or ſwelled, but leave them lank and ſubſiding. By which means the circulation of the Blood becomes ſlow and leſſened, and more ſlippery than is meet, the production alſo of the vital heat muſt thereupon be neceſſarily feeble and weak, all which conſiderations do ſufficiently evince that this is an efficacious cauſe of this Diſeaſe.

Fourthly,

Fourthly, *Of Sleeping and Watching.*

We grant, that Children ſhould ſleep oftener and longer then Men; yet if it be exceſſive even in Child-hood the matter is the ſame as in defect of exerciſe and motion. For ſleep is a certain reſt and privation of watchings, or of the exerciſe of the ſenſes. But watchings conſiſt in the very exerciſe of the ſenſes, according to *Ariſtotle* in his Book *de Som.* & *Vigil.* Wherefore the evils that we have deſcribed to ariſe from the defect of motion and exerciſes, the ſame alſo muſt needs happen from immoderate ſleep. On the contrary, in that tender age, inordinate watchings are no leſs noxious. For they do not only retard the concoction of the aliment, but they likewiſe taint the Blood with a kind of acrimony, and conſequently diſſipate the Principals of the Natural Conſtitution of the firſt affected parts, and without difficulty introduce a defect of inherent Spirits.

Fifthly, *Of things preternaturally caſt out and retained.*

All the internal cauſes of Diſeaſes might be perhaps not incommodiouſly reduced to this title. For any thing whatſoever contained in the Body, and preternaturally altered, as they are preternatural, they indicate their ablation, and may ſo far forth be reputed among things to be caſt out, which are nevertheleſs preternaturally retained. But we more rightly grant, that all internal cauſes may be diſtinguiſhed into two kinds: one whereof containeth thoſe things which are preternaturally retained and caſt out: the other, ſuch things as are contained in the Body being preternaturally altered. For theſe latter are not only taken away by caſting out, but alſo by Altera-

Alteration, they may be reduced to an agreeable proportion of Nature. However it be, there is a great affinity between the Humors vitiated by Alteration, and the excrementitious Humors which are retained. For there are ſo many and ſuch various wayes of caſting out in the Body, that ſcarce any humor can be imaginably produced by Alteration, which doth not properly relate to the ſecretive and excretive faculty of ſome Bowel, or ſome other part, and is deſtinated to be ſevered and evacuated from it; and therefore though the errors of the firſt concoction are ſcarce corrected in the ſecond or third by Alteration, yet they may be mended by local motion or excretion, made from ſome part of the Body, the unprofitable parts being ſeparated and rejected. In like manner the maſs of blood being any ways preternaturally altered, or infected with ſome Humor, the peccant matter which cannot be otherwiſe ſubdued by Alteration, is quickly exterminated perhaps by excreſſion made from ſome part or Bowel (unleſs withal the ſecretive or expulſive faculty thereof be hindred) therefore it muſt needs be of great moment for a Phyſitian to know what Humors are particularly predominant in any Diſeaſe, and by what determinate wayes they may be moſt properly ſpied out according to the intent and purpoſe of Nature.

For there are as many ſubordinate ſpecies of things ſpied out, as there are diſtinct ſubſtances of the Bowels and other parts deſtinated to that office in the Body. For it is credible, that the Liver doth caſt out one thing, the Kidnyes another, the Sweet-Bread another, the Spleen another, the Stomach and Guts another, the Lungs another, the Brain another, the Stones, the Matrix, the Kidneys, the Kernel under the Chanel Bone, the glandulous parts of the *Larynxes*, the Throat and Jaws another, the

the ſcarf Skin and the Skin another. For it ſeemeth ſcarce admirable, that Nature ſhould build and prepare for her ſelf Organs of different kinds, and yet ſhould make uſe of divers of them for the performance of one and the ſame action. Therefore when the excretion of any of the ſaid parts hapneth to be reſtrained, a certain peculiar filth will flow out from thence into the maſs of Blood, and ſo there will be ſo many differences of things preternaturally retained, as there are kinds of parts inſervient to particular caſting out: and in like manner there will be as many kinds of vitious excretion, either by exceſs, defect or depravation, as there are divers ways thorough which the excretion may be made.

If any man demand, Whether the ſeveral kinds of things excerned be ſufficiently diſcovered and underſtood by us: We anſwer, that an exact knowledge is deſired of that particular humor which is to be caſt out thorow the new Veſſel of the Sweet-bread, then in the next place, what is caſt out by the Kidneys, the Kernel under the Chanel Bone, and the glandulous parts of the *Larynx*: yea, perhaps it is yet ſcarce ſufficiently known, what is rejected by the Spleen. For this cauſe therefore amongſt others, it ſeemed good unto us to ſuperſede in this place any high and accurate diſquiſition of things ſecerned and retained, either in relation to the parts and wayes whereunto they belong, or in order to the preſent affect, and rather to inſiſt on that fourfold diviſion of Humors made by *Galen*; namely, into Choler, Phlegm, Blood, Melancholly, adding onely undue tranſpiration and ſweating. For although we may doubt, whether this diviſion can deduce the humors to the ſubordinate Species, (as we have noted above) more then four parts diſtinct in the ſpecies are evidently dedicated to the caſting out of the humors; yet ſeeing that this diviſion

of

of the Humors is not only approved by all Classical Phisitians, but that it is likewise profitable in it self, and at least reduceth the Humors to certain Heads or Kinds, (however perhaps every kind may comprehend under it severall species) we are resolved for the present to insist upon it, and so much the rather, because under a general notion, it very fitly conjoyneth and containeth both things altered and preternaturally contained within, and also things to be spied out which are not yet excerned, and in that respect it will ease our burden and contract our work. For whilst we make our proceedings in this manner, it will be needless to institute any other peculiar Chapter of the Causes of this Disease, namely, of those altered which are preternaturally contained, seeing that they are comprehended, as we have said, under this Title.

We reduce therefore the internal Causes of this Disease (whether they be excrementitious humors retained, or vitiated by alteration) either to Choller, or to Melancholy, or to Flegm and a Waterish humor, or an undue Transpiration and sweating, for the Blood properly so called is in this affect scarce observed to be faulty.

You may object, *That Practical Physitians do in this Disease commonly prescribe the opening of a Vein in the hollow of the Ear, observing that Evacuation to be very profitable, which Reason could hardly admit, unless the Blood were in some degree peccant?*

We answer, That this Remedy is available, not in respect of the universal plenitude of the Blood, but by reason of a peculiar plenitude of the Head it self. For we have already shewed how that the Blood is unequally dispensed to the parts of the Body, and indeed illiberally to the first affected parts, but to the Head superabundantly.

dantly. Therefore although there be not an universal redundancy of the Blood in this Disease, yet in respect of the particular Plenitude of the Head it self, such a particular emptiness, is perhaps profitably instituted, those outward and small Veins of the Ears being cut. You may reply, that we by this Answer do indeed decline the universal *Plethora*, but that we grant a particular one of the Head, which ought no less to be esteemed a cause of sickness: We answer, That we have at large explained this fault of the Blood, when we discoursed of the unequal distribution of it, unto which place it properly belongeth, seeing that it is a cause of the Secondary, not of the Primary Essence of this Disease; and therefore a vain and superfluous repetition thereof ought not in this place to be expected. We will now therefore proceed to our purposed disquisition of the Humors, and likewise the Transpiration aforesaid.

First Choller (whether by this word you understand that excrementitious humor in the little Bladder, and the Cholerick pore, or a hot, dry, sharp and bitter part of the Mass of Blood, or that unsavory humor that tasteth like stinking Oyl, begotten and flowing in the Stomach by some corrupt aliment, especially that which is fat, adust or salt; or certain sharp and corrosive Excrescences produced in the Body by corrupt Blood) if it abound and luxuriate in the Body, very probably be a cause of this affect.

For although it may rather seem to impugn that cold and moist distemper, which is a part of the first Essence of this Disease; yet in regard that it is apt in some sort to hinder the nourishment of the Parts, either by a vehement irritation of the expulsive faculty, or by attenuation of the aliment, and to extenuate and waste the very inherent constitution of the Parts, and by consequence

quence to consume and dissipate the Natural Spirits, it may not unjustly be numbred among the causes of this Disease. For every one knows, that Persons of a Cholerick Constitution are lean, and of an extenuated habit, because of the Reasons aforesaid. Secondly, A Melancholy humor (whether you understand the Earthy Potion of the Blood, or that saltish or tartar-like matter excreted in and with the Urine, and when the Urine groweth cold, incorporating into little Sands; or that sowr humor powred into the Ventricle, perhaps by the Spleen (though not through that short Veiny Vessel, as the Ancients believed) or those terrene Parts of the assumed Aliment, which are evacuated by siege with the other Excrements) understand either or any of them, if this humor aboundeth, and be not purged out after a due manner, may be blamed as a cause of this Disease. For first, that humor which is the more Earthy part of the Blood, if it exceed a just proportion in the Mass of Blood, it rendreth it unapt to nourish the Parts, especially those that are first affected; for the first affected parts are of a more noble texture than the substances of the Bowels, or the bony parts; and therefore we have already noted how the *Parenchymata* of the Bowels and the Bones do easily admit nutrition, and by a way like unto digestion; but those former parts do require a far more exquisite secretion and elaborated assimilation. And this is the Reason that the fleshy parts of the Bowels are rightly imputed among the impure and grosser aliments, namely, Because they are nourished with a course Blood, and not accurately elaborated before the Union. Secondly, Any great accumulation of Saltish, and Tartar-like matter is an Enemy to Nutrition, and is rather dissipative and devouring than favoring augmentation. Thirdly, The sowr Humor of the Ventricle is

totally ravenous, and as it were hunger-ſtarved, and perhaps where it aboundeth it eaſily communicateth to the Blood ſuch another Depredatory quality: Fourthly and laſtly, The Terrene Dregs of the Belly may if they be inordinately retained, taint and infect the Chylus, and render it unapt for the nouriſhment of the part. Finally we grant, that every propounded kind of Melancholy ſuperfluouſly co-augmented, or preternaturally retained, doth not primarily, properly and directly concur to the production of this evil; but nevertheleſs we are of opinion that indirectly, and after the manner propounded it may contribute ſomething to the generation of it.

Thirdly, Flegm (whether it be taken for the moiſter and colder part of the Maſs of Blood, or for the wheyiſh part thereof, or for the ſlow humor of the Stomach and Guts, or for the Spittle, or for the Snot of the Noſtrils or Jaws, or for that peculiar humor, which perhaps the new Veſſel of the Sweet-Bread doth uſe to evacuate) however you take it, if it be retained, or abound in the Body, it hath a direct reference to this Diſeaſe, and properly deſerveth to be called the cauſe thereof. For this humor is cold, moiſt, ſlow, thick, benummed, little ſpirituous, ſoft, and affected with an internal ſlipperineſs; all which things do exactly comply with the primary and ſecondary Eſſence of this Diſeaſe as they have been propounded. Wherefore upon a ſuperfluous accumulation of this humor, ſeeing that there ſucceedeth a conſpiracy to the production of this affect, it ought juſtly to be eſteemed a proper cauſe and a Primary Agent.

Beſides theſe humors, undue Tranſpiration, as alſo immoderate or defective ſweating may be ſometimes numbred among the cauſes of this affect.

For

For exceſſive Sweating, as alſo immoderate Tranſpiration, doth diſſipate the Spirits, and withall diſſolveth the parts, eſpecially the external which in this Diſeaſe are the firſt affected, and the inherent Spirits being conſumed, it eaſily leaveth a cold diſtemper behind it. For to a juſt excitation and conſervation of the heat of the parts, there is required a certain due and regular ſtrife of the exhalation between breathing, which if it prove deficient, the actual heat alſo (becauſe it partly conſiſteth in this ſtrife (becomes very feeble and languid, and the parts are eaſily expoſed to a cold diſtemper. But we have already ſpoken of this matter at large. On the contrary, Sweat preternaturally reſtrained, as alſo a very ſmall or leſſened Tranſpiration, doth eaſily kindle a Feaveriſh heat, and therefore it likewiſe injureth the Spirits and diſſolveth the Parts, and rendreth them afterwards eaſily obnoxious to a cold diſtemper.

Finally, That we may comprehend all in a word, Any humor excerned above Reaſon or Meaſure, doth eaſily introduce a colliquation of the Parts and a diſſipation of the inherent Spirits, and conſequently diſpoſeth the Body to this affect. And let this ſuffice to have been ſpoken of non-Natural things, and the cauſes of this Diſeaſe thence ariſing.

CHAP. XVII.

Precedent Diſeaſes which may be the Cauſe of this Diſeaſe.

THeſe Diſeaſes, in reſpect of their proper Eſſence, ought only to be called by the name of Diſeaſes, but in reſpect of this Diſeaſe they may rightly paſſe under the notion of cauſes of Diſeaſes, becauſe they leave it behind them as one of their Effects. Yet although many of them (as they relate to the Parents, and ſo imprint a Natural pollution in the Off-ſpring) are rehearſed above, nevertheleſs by right they here deſerve their conſideration, yet in a different reſpect and order. Theſe Diſeaſes we reduce to three Kinds or general Heads.

Firſt, To Diſeaſes that have ſome affinity with this affect.

Secondly, To Diſeaſes that extenuate the Body.

Thirdly, To Diſeaſes inducing a ſtupor and dulneſs in the firſt affected parts.

Of the firſt Kind.

Diſeaſes having an Affinity or holding Congruity with this, we call thoſe who at leaſt in part conſiſt in the ſame with the Eſſence of this Diſeaſe: of this kind are any cold diſtemper, or any moiſt diſtemper, alſo any cold and moiſt diſtemper. For a part of the firſt Eſſence of this Diſeaſe includeth a cold and moiſt diſtemper, and ſo

ſo thoſe diſtempers do partly agree with this Affect. Hither alſo belong a Phlegmatick *Cachocymy*, a Melancholy and a mixt; an obſtruction proceeding from ſuch like humors, a *Cachexia* and a Dropſie. Yea, we may likewiſe refer hither in regard of their affinity, thoſe Diſeaſes wherein the inherent Spirits are ſomewhat conſumed; for a part of the Eſſence of this Diſeaſe conſiſteth in a ſcarſity of thoſe Spirits, but otherwiſe they are more aptly referred to the ſecond kind. In like manner, the Diſeaſes wherein the firſt affected parts are benummed and ſtupified; may likewiſe in reſpect of their affinity be hitherto referred, although they belong more properly to the third kind of Diſeaſes. Moreover, thoſe Diſeaſes wherein the *Tone* of the parts is infeebled and looſned, muſt here be liſted, for they include a part of this diſeaſe; namely, that which conſiſteth in the looſneſſe, lithernes, internal ſlipperineſſe and ſoftneſſe of the *Tone*, as they are above deſcribed. The Philoſophers ſay, That the Elements which agree in like qualities, are eaſily changed one into another; by the ſame reaſon that theſe diſeaſes which partly agree in the ſame Eſſence, do eaſily admit a reciprocal change from one to the other. So we ſee a quotidian Ague, which agreeth with a putrid Feaver in a preternatural heat, upon every ſlight Cauſe degenerate into it. Yet it muſt here be noted, That great diſeaſes are not ſo eaſily changed into ſmall, as ſmall ones into great. Beſides, not all Diſeaſes which perhaps participate alike of the ſame Eſſence, are with an equal facility reciprocally changed. For ſome Diſeaſes are more ſubject to change into others, with whom in part they haue ſome agreement than others: And that for other Reaſons beſide the ſaid agreement, however it be, if a cold and dry diſtemper ſhould happen to a Child, that would eaſily change into a cold and moiſt;

both in respect of the congruity of each Disease to cold, and also a peculiar inclination of that tender age to moisture. For by reason of the coldness, the digestion becomes imperfect, and hereupon crudities or crude humidities are engendred, which a cold distemper in so tender an age would easily and immediately follow. Moreover, a cold and moist distemper in regard of the coldnesse would make a slow Pulse, and in regard of the moisture would make it the more slippery, and the lesse viscous, whereupon the Vital heat being diminished, a benummednes and dulnes, by little and little would steal upon the Vital Spirits. Finally, in respect of that slipperish retention arising from the internal slipperinesse of the Parts, and by reason of the weak concoction, the inherent Spirits of the first affected Parts would also by degrees be diminished, and so by little and little after this manner the perfect Essence of this Disease will be introduced.

Of the second kind.

Most Diseases making lean, or any wayes extenuating the Body, although perhaps they no way participate of the Essence of this Disease (like the Diseases of the first kind) yet they do dispose the Body to the invasion of this affect, and may also leave it after them. For all great quotidian diseases in processe of time do extenuate the Body, wast the inherent Spirits, and dissolve the *Tone* of the parts; and this attrition and attenuation of the parts doth chiefly refer to the first affected parts in this disease. For as we have already asserted, the substance of the Bowels are not so easily subjected to dissolution or dissipation. But in the dissected Carcasses of those who have dyed of Chronical Affects, the Bowels of

are observed to be no less; yea, many times much bigger when the external parts (which in this Disease are first affected) are for the most part made lean with the vehemency of the affect. And therefore seeing that extenuating Diseases do chiefly communicate their force into the first affected parts, it easily falleth out that in Children they help to introduce this Disease. For the inherent Spirits of the first affected parts being very much wasted, a cold distemper must needs follow, which by reason of the crudity is (as we have said above) received by a moist one and a benummedness; because the heat, activity, and vigor of the parts do chiefly depend upon the plenty of Spirits. And thus we have exhibited the manner whereby this Disease doth follow, and as it were tread in the footsteps of other foregoing affects of this kind, which we now further sub-distinguish into three Classes.

The first comprehendeth Diseases extenuating and consuming the habit of the body by wayes insensible; hither are referred almost all Feavers, especially the *Hectick* and Consuming, an Ulcer of the Lungs with a putrid Feaver. Also any continual Feaver that is violent, as a burning, malignant, pestilential Feaver, a Pleurisie, and an inflammation of the Lungs, also the small Pox, and the Meazels when they grievously afflict the Patient. In like manner intermitting Chronical Feavers. Lastly, all Chronical Feavers that torment with vehemence do the same. The second Classis containeth Diseases consuming by manifest passages, and evacuating the solid substance of the parts. Hither you may refer immoderate vomiting, a *Lycntery*, *Dysente y*, *Lask*, the Hepatical Flux, the *Diabetes*, any profuse *Hemorrhage* or Bloody Issue, any excessive sweating, any great Ulcer in any part, eating deep, and daily casting out much matter.

For all these Affects do evidently extenuate the habit of the Body, and cause the introduction of this affect.

The third containeth the Diseases which are said to extenuate the substance of the parts not directly, but by consequence: as all Diseases interrupting concoction, or the distribution of the Blood. For these prohibit the reparation of the parts continually fed upon by the Vital heat. Hereupon several diseases of the Ventricle, Guts, *Mesentery*, Sweet-Bread, Spleen, Liver; Yea, diseases in the Mouth, Jaws or Throat, which hinder only the assumption or swallowing of the Meat, may in this respect be numbred among the causes of this disease. As a distemper, a tumor, a nauseating, a feeble appetite of the ventricle, a distemper, an obstruction and *Schirrhus* of the *Mesentery* and Sweet-bread, or the Liver, Spleen, & the like effects of any of the said parts, which by any means frustrate the due concoction and distribution of the nourishment, and thereupon extenuate the parts by defect of nutrition.

Of the third kind.

Diseases that induce an astonishment to the first affected parts, do also by a peculiar propriety conspire the production of this Affect. For the Natural heat of those parts is somewhat dulled by them, and is rendred less effectual: whereupon a cold distemper stealeth in by degrees, which is also (as hath been said) easily waited on with a moist distemper, a softness and internal slipperiness. Moreover, the Pulse of the Arteries reaching to those parts, is secretly and by little and little weakned, the distribution of the Blood, and the Vital Heat is diminished, the parts themselves are sparingly nourished, and at length there comes a defect of Natural Spirits. So that from this Root also, for some time persevering

the

the Eſſence of this Diſeaſe may at laſt bud forth. The *Apoplexy*, *Palſy*, *Lethargy*, and the like effects do chiefly belong hither. Yet Children do exceeding rarely fall into this affect from theſe ſleepy Cauſes, and ſo rarely, that we have not yet obſerved this Diſeaſe to own its beginning to ſuch affects. If any demand a Reaſon of this rarity; we ſay, that the Bodies of Children by reaſon of their permeability and thinneſs, are ſeldom ſubjected to thoſe affects; but if at any time they are invaded by them, the Diſeaſe doth not firſt aſſault the Natural or Vital, but the Animal Conſtitution, and conſequently procureth for the moſt part a deprivation of the Animal Faculty, before it interrupteth either the Natural or the Vital. But the benummedneſſe whereof we now ſpeak, belongeth to the Natural Conſtitution, into which it cannot be preſently transferred. Moreover, they are eaſily and ſpeedily driven out, by reaſon of the facility of tranſpiration in the Bodies of Children, if peradventure thoſe affects do gently invade them: but if they rage and tyrannize, they eaſily and ſpeedily diſpatch and kill, as being in their own Nature moſt terrible and grievous Diſeaſes; and the ſooner, becauſe of the weakneſs of their Conſtitutions over whom they prevail. But which way ſoever they happen, they ſcarce continue ſo long, as with ſufficient efficacy to imprint this benummedneſs in the Natural Conſtitution of the parts. Yet we grant, that theſe affects may, if perhaps they perſiſt longer with life, affect the Natural Conſtitution with that benummedneſſe, ſo that this Diſeaſe may follow thereupon, although we can neither juſtify, nor aſſert it upon the credit of a ſingle obſervation.

But the Diſeaſes which do moſt frequently introduce an aſtoniſhment in the Natural Conſtitution of the firſt affected parts, are thoſe very ſame which hinder Children

Children are away from ordinary actions and due exercises, especially from the use of their feet, as the luxation, fracture, or some wound of a foot, or thigh, or the leg, or the Back-bone: also tumors and pains, or the like affects, whether they afflict the parts aforesaid or others, provided that they hinder the Children, so that they cannot walk, or play standing upon their legs, or use any Masculine Exercises. For hereupon by degrees the vigor and heat of the external parts waxeth dull, which in this evil are the parts first affected, and from thence the other parts of the Essence of this affect, follow by an uninterrupted and linked succession, as whosoever will, may see above.

We have now run over the Causes of this Affect, and should in the next place proceed to the differences thereof, but that two difficulties do here interpose themselves, which properly result from a higher consideration of the Causes propounded. For all those Causes now alledged seem as well common to Boys of big growth, as to Children, whereupon it may very pertinently be enquired, *How it comes to pass, that they which are grown to mans Estate are not infested with this evil, as well as Children?* Then again, Seeing that the Causes propounded are all of them almost common both to *England* and many other Countries, and some of them to all Climates of the Earth: It may be demanded in the second place, *why this Disease is more frequent and rife in* England *than in other Countries?* These Questions we shall examine in order, and shall freely deliver our Judgment concerning them.

CHAP.

CHAP. XVIII.

The former Queſtion.

WHy they which are elder in years are not equally obnoxious to this Diſeaſe as Children? The terms of the Queſtion ſeem to inſinuate, that this Affect may happen, though very rarely, to thoſe of big age. But we reſerve the ſolution of this doubt till the cloſe of the preſent determination. Therefore in the mean time the Conſtitutions or diſpoſitions both of Children that are chiefly obnoxious to this Diſeaſe, and alſo of bigger Boys which are rarely ſubject unto it, muſt be oppoſed and every way conſidered and thought on: alſo of Youths, Men and Old Men, and that in order to this Affect. For the Queſtion is not abſolute, but comparative, therefore the firſt and beſt way of determining it will be by a mutual compariſon between the different diſpoſitions of the ſaid Subjects, how they admit the impreſſions of the propounded cauſes either with eaſe or difficulty. Then certain accidental and peculiar conditions of young Children, under ſuch an age muſt be likewiſe conſidered in reſpect of which they are under one age rendred more, under another leſſe obnoxious to this Diſeaſe.

That we may the more ſucceſſfully declare the former compariſon, we will diſtinguiſh the ages of men. Here we comprehend Children of ſix moneths of age, a year old, two, three, four years old; there we underſtand

thoſe

thoſe of five years of age or more, Youths, Men and Old Men, and thoſe we call by the general name of Juniors, and theſe by the name of Seniors, unleſs perhaps the matter may require a ſubdiſtinction of the greater ſort: theſe things being premiſed, we addreſſe our ſelves to the collation.

First, The Younger Children are of a colder temperament than the Elder. For the heat of the temperament is augmented from the time of the birth to mans eſtate, at which time it ſtandeth at a ſtay, being far more intenſive than that of Children, but afterwards it declineth by degrees unto extream old age, and a little before that extream age, it falleth into the ſame degree as it held in the time of Child-hood; but before the approach of this term of extream old age, the temperament of aged men is more hot than that of Children, for although young Children may enjoy a greater plenty of Natural heat, and abound with Natural Spirits, yet there is no neceſſity that they therefore muſt be of a hotter temperament, for there is required a concurrence of many things to conſtitute a hot temperament, beſide the inherent Spirits, and the inherent heat; as for example, a large portion of Cholerick humors, and withall or chiefly a ſtrong endeavor of the Vital faculty, namely, in the Pulſes, and the Vital Spirits in their circulation. Seeing therefore that the younger Children are more cold, it is no wonder, if they be more ſubject to cold Diſeaſes than others, ſuch as this is. As for old men, eſpecially ſuch as are inclining to extream old age; we grant, that they alſo are more cold, and upon every light occaſion obnoxious to cold Diſeaſes. Wherefore from hence, namely, from the coldneſſe of the temperament, we infer no difference between younger Children and theſe old

old men, in reſpect of an aptitude to fall into this affect.

Secondly, The younger Children are more moiſt than the elder; for to wax old, if it be taken in a ſound ſence, is to wax dry. For although old men after their manner may be likewiſe obnoxious to moiſt affects, as Catarchs, Obſtructions, a *Cachexy*, a Dropſie, a Palſie, a Lethargy, a looſneſs and trembling of the Nerves, and the like evils, yet really there is ſome difference between a moiſt diſtemper which happeneth to Boys, and that which befalleth aged Perſons. For in Children an adventitious humidity conſtituting the diſtemper, doth not only penetrate the moſt retired ſubſtance of the ſolid parts, but they are totally incorporated with the ſame: But in old Men the ſolid parts, even then when it is endued with a moiſt diſtemper, doth not ſeem to part with its earthineſſe, but to be in ſome ſort compounded of that Earthy Nature, and a certain adventitious, crude and moiſt Juyce, or elſe an excrementitious drunk into the pores, or into the ſubſtance of the parts, yet it is not ſufficiently incorporated or united. For as Sand being drenched in much water, retaineth all its Earthy ſubſtance, however it be ſomewhat moiſt; So alſo the Bodies of old Men, however they may be moiſtened with crude and excrementitious humors, yet do they not depoſite that terrene ſubſtance, or that part which by the *Chymicks* is deſigned by the name of a dead Head, which they daily accumulate unto themſelves from their firſt beginning. This diſtemper therefore of old Perſons is ſpurious not genuine, crude and not perfectly digeſted into the ſubſtance of the parts. And therefore although we grant that old men may in their way labor with a moiſt diſtemper, yet it is manifeſt withall by what hath been ſaid, how great a difference there is between this of aged perſons, and that of young children. Moreover, that this

this moist distemper of old men is lesse Homogeneal to the present affect, then that of children, appears plainly from hence; because it produceth not that softnes and tenderness of parts in old men, as we see it doth in Children, neither doth it equally dispose them to a dissipation or colliquation of the inherent Spirits, or any slippery passage either of the Blood or Exhalations, which are supposed in this Affect: But on the other side, it rather rendreth them obnoxious to obstructions, and the other evils recited before, a comparison therefore being made between the cold and moist distemper incident to younger Children, and that which is wont to affect old men, there resulteth a pregnant reason, why aged People are not so subject to this Disease as Children.

Thirdly, Young Children, although they naturally abound with inherent Spirits, yet by reason of the easie transpiration of their Bodies, and because of the laxity, tenderness and incoherence of the parts, they are much more prone then Elder persons to dissipation and colliquation of the Inherent Spirits, and by consequence upon less and slighter causes they fall into a want of them.

Fourthly, Younger Children by reason of that very same weak consistence of the parts, are also rendred more obnoxious to an astonishment than the Elder. For to the the vigor and activity of the parts, there is required besides a just plenty of Spirits, a strength of their coherence and consistence.

Fifthly, it is not needful for us to add any thing concerning the *Tone* of the parts, seeing we have so often insinuated the weakness of it in Younger Children in respect of the Elder, and any man may observe that upon the increase of years the *Tone* is more and more confirmed.

Sixthly, As for the diminute distribution of the blood

to

to the first affected parts, (which we have already proved to be a considerable part of the secondary Essence of this disease) We say, that the Elder Children do use more strong and frequent exercises then the younger, and therefore that the Pulses of the outward parts are more strongly stirred up in them, and that a greater heat is raised and cherished in them, and by consequence a cold distemper is more potentially driven out of them.

Seventhly, As for the Organical faults, namely, the augmented magnitude of the Liver, Head, and their Vessels; it is a known thing that the proportion of the parts is more stable and confirmed in the bigger Children; and on the contrary, that in the Younger they are easily moved and altered, but the augmentation ceasing, they are not any more afterwards altered, without some unusual and weighty causes. So that even in this respect the younger Children are most subject to this disease.

Let us therefore conclude the parts of the Question, That young Children in respect of their Natural Constitutions and dispositions are more obnoxious to this evil then those that are Elder: and so much the more the younger they are.

But we must not waive an Objection, that here we meet with, which also doth very fitly convey an occasion of passing to the other comparison; namely, of young Children amongst themselves. *For if young Children (as is manifest by what hath been said) are more prone to this Disease by their Natural Constitution and disposition, and the younger they are, the more subject they are: How comes it to pass, that Children rarely fall into this effect, before they are six moneths old, and somewhat more?* For according to the Opinion delivered, Children

should

ſhould ſeem to be principally ſubject to this Diſeaſe immediately after their birth, which yet experience diſappointeth; yea, rather indeed it witneſſeth the contrary; namely, that Children before they are nine moneths old, are ſeldom or ſcarce ever afflicted with this Diſeaſe. Here therefore it will be needful for us to declare that other compariſon of young Children among themſelves. For it cannot be, that this Affect ſhould ſo conſtantly ſpare Children, chiefly diſpoſed unto it, and frequently invade thoſe that are leſs diſpoſed, unleſſe ſome difference did intervene, which did in a diverſe manner relate to thoſe ages, and which notwithſtanding the propenſity of Nature doth retard the invaſion of the Diſeaſe, before the firſt twelve months were compleately expired, and yet afterwards either doth not at all or not ſo potently defend Children from this Diſeaſe. Here therefore we muſt find the very reaſon of the difference between theſe ages: which that we may the ſooner do, it will not perhaps be impertinent to take ſpecial notice by the way of thoſe ages, which upon the authority of experience, are obſerved to be more frequently affected with this Diſeaſe, and likewiſe thoſe ages which are leaſt afflicted with it.

We affirm therefore, that this Diſeaſe doth very rarely invade Children preſently after their birth, or before they are ſix moneths old; (yea, perhaps before the ninth moneth) but after that time it beginneth by little and little daily to rage more and more to the period of eighteen moneths, then it attaineth its pitch and exaltation, and as it were reſteth in it, till the Child be two years and ſix months old: So that the time of the thickeſt invaſion is that whole year, which bears date from the eighteenth month, two years and a half being expired, the Diſeaſe falleth into its declination, and ſeldom invadeth the Child, for the reaſons already alledged. But the

reaſons

reasons *Why Infants newly born are rarely affected, and why from the ninth to the eighteenth moneth they are frequently affected, and why after the first eighteen moneths they are most frequently affected* shall now all of them in their order be produced.

The First Reasons why Children newly born are very seldome invaded with this affect may be these.

The First is, Because the *Embryon* in the Womb is by the equal heat and embracement of the Matrix strongly fortified against this Disease, as we have declared above, and by consequence the same being brought to light doth for a time retain some of that muniment and defence which it contracted from that equal warmth of the Womb, and therefore presently after the Birth it doth not so easily fall into it.

The Second is, Because the Midwives and Nurses do handle them so artificially when they are new born, that their condition is not considerably different from that which they possessed in the Womb. For they enwrap the whole Body excepting the Head in one continual Covering; whereupon the exterior and first affected parts of the Body in this Disease are fortified against the injuries of the outward cold, and the hot exhalations breaking out from any part of the Body are duly and equally retained by reason of that Covering which is two or three times double, and bound about with swathing Bands, and equally communicated to all the parts of the Body, so that they are cherished with an even heat as it were in a common Hypocaust or hot House. Seeing therefore that the first part of the Essence of this Disease consisteth in an unequal cold distemper, it is no wonder if these Defences and Fortifications of the Body do avert it at least for some short time.

The Third Reason may perhaps be the wholesomness of the Diet, for Breast-Milk is the most salubrious and agreeable nourishment of tender age, especially when it is sucked from the Brests: for it is a simple and uniform Meat, full of nourishment, easie to concoct, and friendly & familiar to the constitution of Infants. Therefore so long as they are conveniently nourished with it, they incur the fewer errors of diet, and are rendred the less obnoxious to this Disease. Yet it must be noted, that if the Nurses milk be not laudable and good in it self, or otherwise disagreeable to the Constitution of the Infant, then this reason is of no force. Therefore if the Nurse be big with Child, or immoderately addicted to Venery, or any wayes sickly, or given to drunkenness and inordinate feeding, it is safer to hasten the weaning of the Infant, unless you are provided of a better Nurse.

The fourth and last reason is the slowness of the motion of this Disease in his first invasions. For it stealeth on so slowly, that it scarce bewrayeth any preparations to an assault till some moneths are expired, unless the progress of it be advanced by some extraordinary and most vehement Causes, as by some more violent Affect preceding or coming upon it. Seeing therefore that this Disease doth so slowly take Root, and seeing that Children, as we have formerly shewed, are commonly born free from it, it seldome hapneth to break out evidently into act till the sixth, yea, indeed till the ninth moneth. And thus we have given the Reasons, why Infants newly born, notwithstanding the weakness of their Constitution, are for many moneths priviledged from this Disease.

Secondly, The causes why Children from the ninth to the eighteenth Moneth are every day more frequently infested with this affect, are these,

First,

First, Becauſe the firſt Cauſe even now propounded, driving away this Diſeaſe in thoſe that are new born, doth daily remit, and before the ninth Moneth doth totally vaniſh. Secondly, In like manner the ſecond propulſive Cauſe before alledged till that age doth every day grow more effectual. For the hands of Infants after ſome Moneths, if not before, are uſually ſet at liberty from the Priſon of their Blankets, and perhaps their Feet alſo before they are ſix moneths old, although at night they are ſwadled up again. In the day time therefore at the leaſt theſe outward Members are deſtitute of that common and comfortable warmth. The Nurſes likewiſe do many times erre, when they cloath the weak and feeble Infants too ſoon. For they idly define the time of cloathing them by the number of the Moneths, ſeeing that they ſhould rather give an eſtimation of it by the ſtrength and activity of the motion of their Hands and Feet. For when the motion and exerciſe of thoſe parts doth avail more to excite and cheriſh their heat, and to irritate their Pulſes, then the warmth of their ſwadling cloaths, without all controverſie that is the time to deveſt Infants from their ſwadling cloaths. Moreover thirdly, After the ninth Moneth Children uſually are fed with other aliment beſides Breſt-Milk or other Milk, and from that variety in feeding there eaſily reſulteth ſome errors in point of Diet. Fourthly, The ſlowneſs of the Motion of this Diſeaſe doth not hinder, but that it may break forth into act after the ninth Moneth. For the motion, by reaſon of the unperceivable ſlowneſs of it, at the end of certain moneths doth exhibit ſome effects and impreſſions. Laſtly, the evils of breeding teeth do likewiſe contribute very much to the ſame purpoſe. For the Teeth begin to breed commonly about the ſeventh Moneth, and come accompanied

with divers Symptoms, which easily dispose tender Bodies to this affect.

Thirdly, The Causes why this Disease most frequently rageth when the Child is eighteen Months old, are;

First, Because the Causes before cited hastning this Disease in the younger Children, are upon the approach of this age taken away, or at least they operate with weak and ineffectual powers.

Secondly, The evils of breeding Teeth, although in respect of the immediate Symptoms which they produce perhaps before this time they nourish; yet for the most part they leave behind them in the first affected parts a certain disposition, which privily hiding it self within them, after the term of some moneths produceth this Disease. But the breaking out of the Dog-teeth chiefly hath reference to this place; seeing that these break out a little before the Child is a year and an half old, and their coming forth likewise is of all other the most painfull.

Thirdly, Hitherto belong also those accidents which happen by reason of ablactation or weaning of the Child, and at that time a great alteration befalleth Children in matter of Diet, which they endure not without palpable molestation. For hereupon they are angry, they cry, the commotions of their minds makes them forsake the nourishment of their Bodies, they are hard to be pleased, neither do they sleep quietly. All which things do easily imprint in the parts first affected at least a foregoing disposition (although perhaps not till a long time after) to this affect.

And so at length we have also run through this second Comparison, namely, of young Children among themselves, and we have briefly explained the Causes why those

hoſe Children at one age are more, and at another age are leſs expoſed to this evil.

The Third part of the Queſtion ſtill remaineth, which as we have ſaid, we would reſerve to be examined at the cloſe of this Diſputation; namely, Whether thoſe that are of a greater age do ſometimes fall (though exceeding rarely) into this Diſeaſe.

We ſay firſt, For ſo much as concerneth that part of the Eſſence of this Diſeaſe, which conſiſteth in a moiſt diſtemper, that ſome difference muſt be expected to be between that diſtemper in younger Children, and thoſe that are bigger, in young Men, Men, and eſpecially in old Men, for the ſame difference which we put before between the moiſt diſtemper of young Children and old Men, may according to quantity as more or leſs, be obſerved between the middle Ages, and therefore the humidity of the younger Children will be better concocted, and more genuine than that of the elder, as it is obvious to collect, *mutatis mutandis*, from the ſame reaſoning.

Secondly, As for the organical faults, we affirm, that neceſſarily there concurreth a vaſt difference between Diſeaſes of this kind incident to Children, and perhaps to thoſe of greater age, for the tumors of the Bones in the Wriſts and Ankles, as alſo that narrowneſs of the Breaſt, likewiſe that diſproportionately augmented bigneſs of the Head and Liver, are either leſs conſpicuous or altogether undiſcernable, eſpecially in thoſe that are grown to full age. For as the years encreaſe the Figure and proportion of the Parts becomes more compact, firm and ſtable; neither doth it eaſily come to paſs that one part doth much grow out more than another by true augmentation.

Thirdly, We ſay, that excepting the two premiſed

conditions, and that in that manner as they are propounded, this affect according to the other parts of the Essence thereof (although indeed very rarely, and upon the highest causes only) may happen to Boys, Young Men, Men, and old Men. For first a cold distemper without all controverse may befall them, though not so easily as Children. Secondly, A moist distemper may also invade them, but yet only by the limitation propounded. Thirdly, A want of inherent Spirits may also befall them, but then it must proceed from the most potent causes. For Chronical Diseases, and such as consume the habits of the parts, or dissipate it into ayr, or wast it by long fasting and an *Atrophy*, do necessarily leave behind them a paucity of Natural Spirits. We see the outward parts even in those that are grown to full age, when they are extenuated and consumed by such like causes, to wax feeble, to languish, wither, and become destitute of all sufficient Spirituosity. Yet we grant, that in those that are grown to full age, the evil which causeth leanness being overcome, the wasted Spirits may soon be repaired by the vigor of the Pulses, and that the rudiments and impressions of this Disease may be rooted out within one or two weeks, and by consequence, that they are seldom affected with it. In the interim, if it should so fall out, that upon that consuming of the Inherent Spirits, some impediment should intervene that might rerard their reparation, it is possible that this disease may grow from thence in that manner as hath been said. But a numbness of the Inherent Spirits must necessarily follow upon a fewness of them. Fourthly, The parts of the Secondary Essence, seeing that they have a strong dependance upon the Primary faults, where these persevere long (the Organical faults being excepted) they may supervene in their order. So that we do not

doubt

doubt, but this Diſeaſe may happen to any age after childhood; the reſtrictions which we have now propounded being granted, and upon the urgency and preſeverance of great and weighty cauſes.

One amongſt us affirmeth, that he had a Gentleman in cure about thirty years of age, who by daily immoderate uſe of Wine and Tobacco, continued for ſome whole years, having neglected the due receiving of his meat, fell into ſuch a weakneſs of Stomach, that continually every morning he vomited, and loathed all kind of Meat, and if at any time he ſwallowed any with unwillingneſs, he preſently vomited it up again: to appeaſe this quezineſs of Stomach, he was at laſt compelled to a continual uſe of ordinary *Aqua vitæ*, but afterwards his cuſtome was to mingle it with ſtale Beer, and a quantity of Sugar; and with this drink alone he preſerved himſelf alive for many moneths. In the mean time all thoſe parts which in this Diſeaſe we call the firſt affected, were extreamly lean, and became ſoft, looſe, languid and withered, ſo that he could neither turn himſelf in his bed, nor riſe, nor walk, nor ſtand upright, yet he felt no pain, neither was there any privation of ſenſe and motion, no cough, no uneaſie reſpiration, his face was well coloured, and all the parts about his Head were in a good condition, and well habited, ſo that had you judged of him by his countenance only, you could ſcarce have ſuſpected that he was ſick. As he lay in his bed he would chat with his Companions, take Tobacco by turns, and drink that mixture of Beer and *Aqua vitæ* aforeſaid. The event of the Diſeaſe doth not indeed belong to this place, yet we ſhall ſet it down to gratify them who are deſirous to know it. The Phyſitian being ſent for, he ſtrictly forbad all intemperance, and amongſt other remedies having given him one grain and a half of *Laudanum Iodinenſis*,

dinensi, he appeased the nauseous infirmity and tumult of his Stomach, which part he likewise strengthened with internal and external applications, and prescribed him such a diet as was most easie of concoction. Instead of exercise, he solicited the heat unto the outward parts with rubbing them every morning: having first given a small quantity of strengthning and opening Electuary, made up with a little portion of Steel, which he drank in two ounces of Wine, composed of Wormwood and Mint, a little Saffron being hung in it, to give it a tincture; three ounces of small Beer being tempered with it, and a quantity of Sugar to make the taste of it more pleasant. Moreover, he purged him by fits with gentle Medicines, and in the evening comforting him with cordials. Within twenty dayes he grew to such a degree of amendment, that he could walk abroad for the space of an hour, and could without any striving or much weariness climb ladders without any help. But afterwards by a relapse into the like intemperance, he died in the absence of his Physitian. But let us return from this digression into the way, and direct our speech to our intended scope. The Affect being now confirmed, as it was upon the first coming of the Doctor; Besides the faults of the Stomach, it seemed to include a great part of the Essence of this Disease we now treat of. For in the parts subservient to motion; namely, those that are first affected in this Disease, there was a cold distemper, either through defect of motion, or by reason of the immunite afflux and dispensation of the Vital Blood. Again, the softness, slipperiness, laxity and litherness of those parts shewed, that there was a moist distemper in them. Also the extream leanness of those parts did sufficiently demonstrate a fewness of inherent Spirits, and the unfitness to motion, and affectation of rest and ease did strong-

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ly witneſs a numbneſs in thoſe parts. The full and flouriſhing habit of the parts about the Head, when the other parts were extenuated, was a forcible reaſon to prove the unequal diſtribution of the Blood. But the peculiar cauſe of this inequality in this ſick man, might be his frequent vomiting, whereby a more plentiful afflux of the Blood was driven to the parts about the Head, the other being almoſt deſtitute of it.

Any man may perceive by what hath been ſaid, that at leaſt the greateſt part of the Eſſence of this Diſeaſe was comprehended in this mentioned Affect. From whence at length we may probably infer, that it is poſſible for this Diſeaſe to happen to thoſe of full growth, being conſidered according to the propounded limitations; although it very ſeldome comes to paſs, becauſe great cauſes and length of time are required to the production of it. And thus at laſt we have put an end to the ſearch upon the former Queſtion.

CHAP.

CHAP. XIX.

The Later Queſtion.

Why this Diſeaſe happeneth more frequently in England *then in other Countries? And whether it be Natural to* Engliſhmen?

IT is acknowledged by the common conſent of Phyſitians, that there are certain *Country Diſeaſes*; namely, which more frequently infeſt the Inhabitans of ſome one Region than of another, by reaſon of ſome Common Cauſe. But ſeeing the relation of the Country to the Diſeaſes uſually raging in it, may be obſerved to be of a diverſe kind; and ſeeing wiſe men have improperly denominated ſome Diſeaſes from certain Countries: Finally, ſeeing that they who have hitherto written of Country Diſeaſes, have without difference called all Diſeaſes which are moſt rife in any Region by the name of *National* or *Country Diſeaſes*, as if they did equally participate of the Nature of a Country Diſeaſe; we have judged it to be a profitable enterprize to premiſe ſome things in this preſent diſquiſition, concerning the differences of theſe Diſeaſes among themſelves.

First, Therefore thoſe affects which have the denomination of Country Diſeaſes from the Region, are *properly*, or *leſs properly and abuſively ſo called.*

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There are four conditions required to denominate a Country Diſeaſe properly ſo called.

The firſt condition is, *That the Diſeaſe be more frequent in that Region unto which it is attributed, as Natural and common then in any other Region unto which it is not attributed as ſuch.* For a common or Country Diſeaſe is always ſuppoſed to have an unequal reference to divers Regions, and to infeſt one more (namely, that unto which it is aſcribed) and another leſs.

The Second Condition is, *That the Diſeaſe depends upon ſome kind of inclemency of the place.* For a Diſeaſe properly common, imputeth a certain crime or faultineſs to the very place; therefore when a place is not guilty of ſome peculiar fault, ſuch an imputation is improperly, falſly and unjuſtly aſcribed unto it.

The Third Condition is, *That the inclemency and ſharpneſs of the Region be ſo great, as to affect the more wary, and ſuch as obſerve a due Regiment of health, and ſuch an one as is appropriated to the place.* For in the Regiment of health ſome peculiar Caution is due to certain Countries. Therefore when a People neglecting ſuch a peculiar Obſervation of the place, ſhall fall into ſome Epidemical Diſeaſe by an erroneous uſe of the non-natural things, that it is not to be reputed a common diſeaſe, but to be imputed to the error, want of wit, incogitancy and negligence of the Inhabitants. For this diſeaſe which we ſuppoſe, might have been prevented, had the Regiment of health appropriated to the place been rightly obſerved.

The Fourth Condition is, *That that vitious conſtitution of the Country do either continue long, or return often.* For the fault of a place that is fugitive, not permanent nor often returning, muſt be accompted as ſomewhat forreign and meerly accidental in reſpect of the Region,

Region, and cannot properly denominate a common Diſeaſe. As for example, If a pernicious and unuſual Air ſhould chance to be blown hither from other Countries, and ſhould produce a common diſeaſe, which ſhould not prevail beyond ſome moneths; that diſeaſe ought not properly to be called common, but rather caſual and chanceable. Wherefore the Feaver of *Hungary*, and the Sweating-ſickneſs of *England*, although they obtained their Names chiefly from thoſe Regions, yet are they abuſively termed common, becauſe they want a durable fomentation from thoſe places, and becauſe they either ceaſe altogether, or at leaſt are not for the preſent more predominant in this or that place than in another.

Diſeaſes improperly common, do indeed include the firſt propounded condition of ſuch as are properly ſo called, namely, becauſe they more frequently occur in that Region whereunto they are attributed, then in another, (for otherwiſe they would not deſerve the appellation of Diſeaſes improperly common) yet they want the ſecond, third and fourth. For they either lack that fomentation that is rooted in the Region, or that fomentation which they have is very weak and inconſiderable, which alſo may be overcome by a Regiment of diet appropriated to the place; or finally the fomentation is not permanent nor durable, nor frequently returning. Now by fomentation we underſtand ſomewhat that is faulty in reſpect of health, founded likewiſe in the condition of the Country. Therefore when ſome common and frequent Diſeaſe ariſeth from the abuſe of ſome commodity of the Region, as if ſome Nation by reaſon of the great plenty of fruit, and the like fruitfulneſs of the place, or by reaſon of a long and ſecure peace ſhould abuſe themſelves to intemperance, ſloth, or the like vices, and thereby incur ſome common Diſeaſe, that Diſeaſe is not properly to be called

called common. For the occasion of that Disease, which the Country did supply with, was laudable in it self, and therefore what event soever succeeded, the abuse thereof ought to be imputed to the error of the Inhabitants, not to any unkindness or discourtesie of the Region. In like manner, if the fomentation of a Disease be culpable, yet shall not that be founded in the very constitution of the Country, but in some action of men, as when after the desolation of War, the unburied Carkasses pollute the Air with their putrifaction, and thereupon introduce an Epidemical Disease, this ought not to be called a common or Country Disease, because it dependeth upon the liberty of mans will, and was not procured by any proper fault of the place.

Sometimes also a Disease is ascribed to a Nation or Place by calumny, and abusively through the malevolent and corrupt intentions of some People to traduce the Fame of their neighbour Nations. After this manner the *Neapolitans* call the *Venereous Evil*, the *French Pox*, as if it were Natural and Common to the *French*. And on the contrary, the *French* to requite the Slander, term it the *Neapolitan Scab*. But of this enough.

A Disease properly called Common, is either Original and Ancient, or Adventitious and New. The Original is that which from the first Inhabitation of the place hath infested the Inhabitans: of this kind perhaps is the Disease in the Throat called *Brachocele* among those that dwell about the *Alps*; that burning Feaver which they call a *Calenture*, under the torrid *Zone*: the mortification of the parts under the cold *Zones* towards the Poles by extremity of cold.

A Country Disease that is new and adventitious, is that which is brought into a Country by some common Cause. This is threefold, for either it proceedeth from some

ſome Original fault of the Region, prevailing by the advantage of time againſt the health of the inhabitants, or from ſome alteration or innovation hapning to the Region it ſelf. Or from ſome incongruity between the Place and the complexion of the Natives.

First, A new common Diſeaſe invadeth a Country by ſome Original fault in proceſs of time prevailing more and more. For 'tis poſſible, that the firm and ſtrong Bodies of the firſt Inhabitants of any place may powerfully reſiſt the unwholſome influence of the Region, and for many Ages may repel the invaſion of the evil, although their poſterity afterwards in length of time, being by degrees changed in that peculiar Reaſon of the complexion whereby they maintained the former reſiſtance, may fall at laſt into ſome common Diſeaſe. For the *Plica* of *Poland* and the Scurvy, are common Diſeaſes to the *Sarmatians*, *Polanders*, and the Inhabitants of the *Baltick* Ocean, and they are likewiſe new Diſeaſes, and (as all men confeſs) totally unknown to the Ancients. But to this day it is not known that any notable or remarkable Change or Innovation hath hapned to thoſe Regions before the breaking out of thoſe Diſeaſes, to which you might probably aſcribe the beginning of a new Diſeaſe. Wherefore we ought rather to ſay, that thoſe new Diſeaſes did proceed from ſome ancient and original fault of the places: and yet that they did not bewray themſelves at firſt by reaſon of a peculiar reſiſtance made by the Natural ſtrength of the Inhabitants. For to this very day ſome Families in thoſe places are free from thoſe Diſeaſes; and very credible it is, that they may ſo perſevere, not yielding to the injuries or threatnings of the Region.

Secondly, A new common Diſeaſe may reſult from the altered or innovated conſtitution of the place. Such kind

kind of innovations happens in Countries, either by Earthquakes or Inundations of Water, or the bursting forth of some new pernicious Springs, or perhaps of some new Mineral Exhalations from the Cavous parts of the Earth, or from some malignant Aspect of the Stars and the like Causes.

Thirdly, A new common Disease may proceed from the incongruity of the Place, with the complexion of the Natives. Such kind of Diseases chiefly happen to Nations, when they transplant themselves from one Region to another, especially when the Constitutions of those Countries which they go to possesse, are very different from those they forsook. So the English who first inhabited *Virginia* were frequently afflicted with a swelling of the *Abdomen* and the *Hypochondriacal* parts; who upon their return to *England* were cured without any difficulty, but they who continued in *Virginia* were not so easily restored to health.

Moreover, National and common Diseases differ among themselves. Because some of them totally depend upon the inclemency of the Region, and others in part only. The mortification of the parts seemeth to be of the first kind which befalleth men in the Northern Tracts near the Poles. For the whole Essence of the Disease may be ascribed to the cold and sharpness of the Place. Of the second kind the *Venereous Pox* among the *West-Indians* seemeth to be. For there it is conceived to be partly gotten by impure Copulation, and partly to be contracted from the Insalubrity of the place. In like manner the Bloody-Flux is predominant in *Ireland*, depending partly upon the constitution of the place, partly upon an erroneous and preposterous diet. And thus much in general be spoken of the differences of common Diseases. In the next place we must

enquire

enquire why this Diſeaſe is more rife in *England* than in other Regions? And by the way it muſt be obſerved, *Whether, and how far forth this Diſeaſe may be ſaid to be Natural to Engliſh men?*

Firſt, it muſt be obſerved, that *England* is an Iſland which borroweth ſome humidity from the adjacency of the Sea, and ſome frigidity from the diſtance from the *Equator*, then that it aboundeth with innumerable fountains, diſcovering their Springs almoſt in all places. Laſtly, That it is watred with many and frequent ſhowers of rain more than other Regions. All which things do ſufficiently atteſt the frigidity and humidity of the place. Seeing therefore that a cold and moiſt diſtemper is a part of the Eſſence of this Diſeaſe, we may eaſily infer that the bodies of the Inhabitants are here more inclined to thoſe diſtempers then in other hot and dry Countries.

If therefore you demand, *Whether this Diſeaſe at leaſt conſidered in this part of it, may rightly be ſaid to be natural to Engliſh men?*

We anſwer, That in ſome ſort it may (although perhaps not properly (namely, ſo far forth as the ſame is attributed as natural to other Regions, alike cold and moiſt (although perhaps it may not yet be obſerved in them.) For thoſe Countries are as readily diſpoſed to imprint a cold and moiſt diſtemper as *England* it ſelf. Yet it muſt be obſerved, that a cold and moiſt diſtemper is a common part of the Eſſence of this Diſeaſe, and that it alone doth not manifeſt the Affect, for every cold and moiſt diſtemper doth not introduce this evil. Wherefore although we grant, that an exceſs of cold and moiſture may be imputed as a fault to *England*, yet we deny that from thence it can be rightly inferred, that the whole Diſeaſe is common and Natural to Engliſh men.

More-

Moreover, Some Countries may perhaps be found out far exceeding *England* both in cold and moisture, as *Scotland*, *Holland*, *Zealand*, *Ireland*, and *Denmark*, and the like; wherein notwithstanding this Disease hath not been observed to appear much. Therefore if this Disease be not rightly imputed to these Regions, wherein that common cause is predominant; namely, the excess of cold and moisture, Certainly neither can it justly be imputed to *England*, by reason of that common Cause, which is here less prevalent. Again, The coldness and moistness of this Kingdom doth not so far transcend a mediocrity, but that by outward and inward applications, exercises, and the like; namely, a right use of the six things not Natural, they may be sufficiently corrected to the cashiering of that imputation, Wherefore if these things be so, namely, if a cold and moist distemper be only a common cause of the Disease, if other Regions wherein this Affect hath not yet been observed to make any impression, are at least equally obnoxious to cold and moisture: Finally, if those distempers may be prevented by a Regiment of diet appropriated to the place; certainly the reason drawn from the coldness and moisture of the Climate, which even now we produced to shew why English men should be more frequently invaded with this Disease then others, will be very weak and insufficient, so that we can by no means place our content in that alone, and therefore we intended nothing more by that assignation, than that *England* doth more dispose the Bodies of the Inhabitants to this Affect than hotter and drier Regions do the Bodies of their Inhabitants. And so we proceed to the search of the other causes of the rifeness and frequency of this Affect.

In the second place we can note that *England* is very

fruitful and Child-breeding, being ſufficiently favourable both to Conception and Child-bearing, and not ſubject to cauſe abortions. Now from hence it comes to paſs, that not only ſtrong and able bodied men, and ſuch as are endued with perfect health, but the weak and ſickly perſons do alſo generate; weak and unſound women likewiſe, and ſuch as are prone to a conſumption, do conceive, carry their children nine months, and bring them forth in a decent and laudable manner. But it is no wonder if the Iſſue begotten by ſuch matter, and which oweth its life almoſt to the clemency of the place alone, ſhould be feeble and languid, and very ſubject to this Diſeaſe. For as much as the very benignity of the Region may in this reſpect be the occaſion of ſome infirmity in the Iſſue. For as barbarous People in time paſt by an inhumane experiment upon their new born infants, namely, by dipping their naked bodies in the coldeſt water, deſtroyed the weak ones with the extremity of the cold, and gave education only to the ſtrong ones, whoſe vigorous Conſtitutions overcame the injury of their cruel policies, purpoſing by that inhumanity to have an univerſal race of ſtrong and luſty people. So on the contrary the very clemency of the place promiſcuouſly preſerving the languiſhing and weak Children together with the ſtrong & healthful, doth miniſter an occaſion of bringing forth a mixt kind of people ſome ſtrong and ſome weak and ſickly. Yet leaſt any ſhould miſtake, we do not mean that all the Children in this Kingdom which are born of weak and ſickly Parents are ſubject to this Affect. For although if one or both of the Parents be infirm, the Children will be infirm; yet it is often ſeen that when the Parents have been very ſtrong and healthful, yet their Children have been very ſubject to this Diſeaſe. Wherefore neither do we reſt in this ſecond cauſe, but

another

another muſt yet be enquired out, from whence we may derive a ſufficient reaſon of the frequency of this evil.

We affirm therfore in the third place, That the rifeneſs of this Diſeaſe in *England* hath been much promoted, by that long and ſecure peace, which we enjoyed before the firſt breaking of it. For by this the more wealthy families, which were firſt invaded by this evil, and which doth ſtill infeſt them more than others, had addicted themſelves to idleneſs and a looſe and effeminate life, and thereupon they fell into a moiſter, ſofter, and degenerate Conſtitution, and ſuch as was leſs purged and cleanſed from excrementitious humors, and by conſequence their Children were even procreated obnoxious to this Affect. You will ſay, that *Scotland* and the Northern parts of *England*, although they enjoyed peace and ſecurity, yet they are ſeldome obſerved to fall under this Affliction.

We anſwer, True it is that *Scotland* and the Northern parts of *England* are leſs affected with this Diſeaſe than the Southern and the Weſtern. In the mean time peradventure the firſt impreſſions and rudiments of it are far more frequent in thoſe places; yea, and in ſome foraign Countries, then is commonly beleived. For although this evil be very familiar in the South and Weſt parts of this Kingdom, and very well known among the Vulgar ſort, yet we have many times ſeen Children afflicted with it in a ſlight manner, of whom neither the Parents nor others of the ſame family did ſuſpect the leaſt evil: Yea, we have known many, whom none of their friends thought to be affected, to be healed with us any help of Phyſick by the ſole benefit of the increased heat, or by the increaſe of age or exerciſes. How much eaſier therefore may the firſt rudiments of this Diſeaſe be

concealed from them, to whom it is leſs familiar, and among whom it ſeldom aſcendeth to that degree, that they need to implore the Phyſitians help. We conjecture therefore that this Diſeaſe is more frequent then is commonly beleived both in *Scotland* and the Northern parts of *England*; yea, and in ſome Countries wherein the people are ignorant of it to this day: but in thoſe places they are ſo gently tormented with it, that they are ſeldom condemned to the hands of the Phyſitian. For that is the cuſtome of the Vulgar ſort, not to ſend for the Doctor (eſpecially to Infants and young Children) unleſs the vehemency of the Diſeaſe conſtrain them. However the matter is, we ſeem not yet to have given ſatisfaction to the objection propounded, *Why the South and Weſt Country men of* England *are more grievouſly and frequently conflicted with this Diſeaſe, then the Northern People and the* Scots, *although both Kingdoms equally ſhared the bleſſing of the laſting peace and ſecurity.* Therefore we grant that a higher reaſon yet muſt be given for this difference. Fourthly therefore and laſtly, we ſay, That the cauſe of this difference is the affluence of all good things in theſe Southern and Weſtern Countries of *England*. For this part of the Kingdom is much the more fruitful, rich and flouriſhing, and abounding with all manner of allurements to pleaſure. Therefore it is no marvail if the cuſtoms of men do firſt degenerate here, their Spirits decay, and the ſtrength of their Bodies begin to diſſolve: Now that this degenerate and delicate manner of living doth weaken families, is a truth ſo ſolidly and conſtantly atteſted by Hiſtorians, that it were an impertinence to offer any proof of it. For you may obſerve that the moſt Noble and Gallant Families have been very much reproached for theſe very cauſes; yea, and ſooner or later ſometimes totally extinguiſhed, and ſo much the ſooner as they have the more refuſed to under-

dergo labors, and to inure themſelves to maſculine exerciſes. Neither are families ever plunged in a greater danger of degeneration, then when they abound with all good things, and lying open to plenty and ſecurity they are moſt powerfully invited to delicateneſs, idleneſs and effeminateneſs, without any labour, care, and ſolicitude. Who was more rich, ſecure, and effeminate, than *Solomon?* He left *Rehoboam* a degenerate Son behind him. And perhaps the family of *Henry* the 8th. is extinct for the like cauſe. We could heap up almoſt innumerable examples to prove this, if it were needful. However it be, we ſee plainly, that this Diſeaſe doth more frequently and vehemently invade the families of the wealthy, than the cottages of poor men, and therefore it ought not to ſeem ſtrange that it likewiſe infeſted the richer and more pleaſanter parts of the Kingdom; namely, the South and Weſt, before the North parts. But theſe things ſhall ſurfice to have been ſpoken concerning this matter. It remaineth only that we enquire, *whether and how far the three laſt aſſigned cauſes relate to the denomination of a Common Diſeaſe, and whether in reſpect of them, this Diſeaſe may be aſcribed to* England *as common and Natural?*

You muſt know then that theſe three cauſes in as much as they depend upon the Region; are not properly cauſes, neither by their own nature do they produce this affect, but that they are only an occaſion whereby this Diſeaſe may accidentally ariſe. For in themſelves they denote the laudable conditions of a Country, at leaſt they infer not what is culpable in it. For who can accuſe his Country, becauſe it favoureth the procreation of Children, much leſs make outcryes againſt it, becauſe it enjoyed long and ſecure peace. Finally leaſt of all ca lumniate the pleaſantneſs, fruitfulneſs, and affluence of all

good things: For all these things are in themselves blessings, and conditions to be wished for in a Country. Seeing therefore as we have shewed above, that a Disease properly common doth imprint some mark of a vitious Constitution to the place to which it is ascribed; It is impossible that any Disease can be attributed unto it as properly common, by reason of the commodity of the Region. Wherefore (that we may comprehend all in a word) although this Disease in respect of the coldness and moistness thereof have a fomentation in the very Constitution of the Country. Although also that it borrow three other occasions of invading from the Country; Yet seeing that those distempers may be prevented by a due observation of the Regiment of Health appropriated to the place; and seeing that the three other occasional causes, are not properly blamable, but desirable, we must affirm that this Disease is not properly Common to *England*. And so we have put an end to the search of the causes of this Disease.

CHAP.

CHAP. XX.

The differences of the Diſeaſe, called the Rachites,

THere are many differences of the *Rachites* in regard of the concourſe of ſeveral evils, and more than any man would eaſily imagine; ſome whereof are of great importance, and others leſs conſiderable: we have reſolved here briefly to propound the chiefeſt. For the knowledge of them is not only profitable to define the *prognoſtical* cauſes, whereby the various events of a Diſeaſe are diſtinctly foretold according to thoſe differences; but it alſo much conduceth both to the prevention and the cure of a Diſeaſe; namely, that by a conſideration of them apt and fit remedies may be choſen.

Now theſe differences ariſe either from the Eſſence of the Diſeaſe, or from the cauſes thereof: or laſtly, from Diſeaſes conjoyned with it. The Eſſence of a Diſeaſe may vary many wayes: Firſt, By reaſon of the parts of the Secondary Eſſence either preſent or abſent. Secondly, In regard of the magnitude of it. Thirdly, In reſpect of the the vehemence. Fourthly, in regard of the Spirits; And fiftly in reſpect of the times.

We grant indeed, That there is a certain agreement between ſome differences comprehended under theſe titles; yet ſeeing that the formal conceptions of them are diſtinct, it muſt be confeſſed that they deſerve diſtinct

considerations. For although a Diſeaſe, even in that very reſpect may be called greater, becauſe it containeth many parts of the Secondary Eſſence in the ſame Patient yet this is a different and diſtinct conſideration from that of the magnitude of that effect. For the magnitude properly hath reſpect unto the degree of receſs from the Natural State, and not to the Nature of the part of the Eſſence either preſent or abſent, for hereupon reſulteth more then a gradual difference. In like manner ſome of the other differences do perhaps ſignifie the ſame thing, in a concrete and reſtrained acception, which notwithſtanding in an abſtracted and formal conſideration denote a diverſity. But let us proceed.

The firſt difference of this Diſeaſe is that which ariſeth from the preſence of few or many of the parts of the Secondary Eſſence thereof. For although all the parts of the Primary Eſſence are perpetually preſent with the Diſeaſe it ſelf, yet there is no neceſſity that all the parts of the Secondary Eſſence ſhould be alwayes preſent. For theſe are after-comers to the firſt Eſſence, and do by degrees come upon it; Yea, ſome of them may be ſo highly intercepted by the intervention of reſiſting cauſes that they may not at all appear. Hither you may refer that difference, which we propounded at the foot of the precedent diſputation, and which we ſhewed might poſſibly, though indeed very rarely, befall thoſe that were grown to full age. But becauſe our purpoſe here is only to handle the Diſeaſe as it is incident to Children, we ſhall be content to paſs by that difference thus noted by the way. But even in Children themſelves there ſometimes happen ſome parts of the Secondary Eſſence, which have a moſt ſtrict conjunction with the Primary Eſſence, at leaſt they ſucceed them in the order of Nature. For the Primary Eſſence hath the efficacy of a cauſe, which in

Nature

Nature doth ever go before the effect. But in order of time ſome parts of the Secondary Eſſence do conſpire as it were, and concur with the Primary Eſſence in the invaſion; and others again do come afterwards, theſe we muſt here diſtinguiſh. For the former ſort are abſolutely inſeparable, the later ſort ſeparable from this Affect.

The inſeparable parts of the Secondary Eſſence may be reduced to theſe Heads. Firſt to the afflicted *Tone* of the firſt affected parts. Secondly, to the unequal and imperfect diſtribution of the Vital Blood. Thirdly, to the too ſmall participation of the Vital influx in the firſt affected parts. Fourthly, to the Secondary faults of the Animal Conſtitution. Theſe faults are ſufficiently unfolded above in our diſcourſe of the Secondary Eſſence of this Diſeaſe; where likewiſe becauſe of their ſtrict carriage with the Primary Eſſence, any man may perceive with eaſe (though they have a caſual dependance upon the Primary Eſſence) that they begin together at the ſame time.

But all the Organical faults which we have alſo already recited, are found to be ſeparable, and ſometimes actually ſeparate from this Diſeaſe. For the magnitude of the Head, and the leanneſs of the Joynts, the crookedneſs of the Shank-bone, or the Elbow, the inflexions of the Joynts, the ſharpneſs of the Breaſt, do not neceſſarily accompany this Diſeaſe preſently from the beginning, but in proceſs of time they bewray themſelves by degrees and ſupervene upon the Affect. And although the Conſumption of the parts, which in ſome ſort hath an influence into the ſaid faults, may be ſaid to be preſent in ſome ſlight degree from the beginning of the Diſeaſe, yet is it indeed only a Symptom, and not a Diſeaſe; neither is it able preſently to produce thoſe Diſeaſes of magnitude,

tude, Figure and Place. Moreover it is not neceſſary, that theſe Organical faults ſhould equally and at the ſame time invade one that hath the *Rachites*, we grant indeed that the extenuation of the firſt affected parts, when the Diſeaſe is of ſome continuance, doth alwayes and neceſſarily ſucceed it, neither can it afterwards upon the perſeverance of the Diſeaſe be removed, that it is likewiſe a principal part of the ſeparable parts of the ſecondary Eſſence; yea that the extenuation whilſt it is making doth immediately follow the ſmalneſs of nouriſhment of the firſt affected parts, almoſt no otherwiſe than the ſmalneſs of nouriſhment immediately followeth the primary Eſſence of the Diſeaſe in the ſaid parts; but withal we affirm that the extenuation being made which is it ſelf a ſecondary part of the Diſeaſe whereof we diſcourſe, doth neceſſarily preſuppoſe the motion and time of the Diſeaſe, and that it cannot be in the firſt moment of the exiſtence of the Diſeaſe. We ſay moreover that Phyſitians do not acknowledge any change made in the parts expoſed to the ſenſe, which doth not yet appear to the ſenſe, and by conſequence they affirm that extenuation befalleth the firſt affected parts, till it be made obvious to the ſenſes which certainly doth neceſſarily prerequire ſome duration of the Diſeaſe. But the improportionate magnitude of the Head, doth begin almoſt at the ſame time with that extenuation of the firſt affected parts, but it may ſo fall out, if a conſuming Phtiſick be joyned together with this Diſeaſe, that that magnitude of the Head may vaniſh before death, as we have already proved by one example in our *Anatomical Obſervations*. The Magnitude of the Head therefore is more ſeparable from this affect than the extenuation of the firſt affected parts, for this cannot be removed without the Diſeaſe be cured. The ſticking out of the Bones

appear

appear ſometimes ſooner, ſometimes later, and they ſometimes grow out more, ſometimes leſs, but upon any long continuance of the Diſeaſe they are ſeldom (if ever) ſeen to be abſent. The narrowneſs of the Breaſt doth not appear, but after a long time when the Diſeaſe is confirmed, and for the moſt part is the forerunner of a Phtyſick. Again, the crookedneſs of the Bone in the Arm, and the Shank-bone, as alſo the inflexion of the Joynts may be abſent through the whole courſe of the Diſeaſe, and may be more or leſs preſent, and indeed is the moſt chanceable among thoſe things which follow this affect. We conclude therefore that theſe Organical parts of the Secondary Eſſence are ſeparable after that manner as we have ſaid, and as more or fewer of them are preſent ſo the Difference of the Diſeaſe is conſtituted, as being more or leſs compounded.

The Second Difference of this Diſeaſe reſulteth from the magnitude thereof. And the magnitude is eſtimated from the greater or leſſer receſs from the natural condition of it. There is a vaſt difference in this Diſeaſe in reſpect of the magnitude. For ſome are ſo gently affected with it that you would ſcarce ſuppoſe them to be ſick. They complain of nothing, they eat, they drink, they ſleep like thoſe that are ſound in health; only they play with more unchearfulneſs, and ſhew forth ſome other very ſlight ſigns of ſickneſs, By the only benefit of Nature likewiſe without any aſſiſtances of Art they perfectly recover, neither their Parents, Nurſes, nor the By-ſtanders ſo much as once ſuſpecting that they are affected with this evil. On the contrary, Others are ſo vehemently afflicted that they cannot be reſcued from death or the danger of imminent death by the moſt approved remedies.

The Third Difference is from the vehemence of the affect

affect. Now this is valued by the violent motion of the Diſeaſe and the reſiſtance of Nature, and alſo by the ſharpneſs of the conflict of theſe things among themſelves. This Diſeaſe, although it be otherwiſe very great, yet is it ſlow in motion unleſs ſome fewer, or ſome other urgent affect be conjoyned with it, and ſtir up the Nature of it to a fiercer oppoſition, yet is the motion thereof ſomtimes more vehement, and ſomtimes very dull, and thereupon it happeneth to be differenced.

The Fourth Difference, is from the ſtrength of the ſick Child or Infant. This is eſtimated by the greater or leſſer preſence of thoſe things which are according to Nature. Hither belongeth the condition of the temperament, the plenty of inherent Spirits, the activity and ſtrength of the *Tone*, the vigor of the Vital and Animal Conſtitution, and the ſtructure of the Organs. For as theſe are more or leſs obedient to the preſcriptions of Nature, ſo their Spirits ought to be judged more or leſs ſtrong, and according to them the evil muſt be determined the more or leſs dangerous. For this cauſe the yonger Children *cæteris paribus* are more dangerouſly affected than the elder.

The Fifth Difference, is from the times of the Diſeaſe. And this difference in a qualified and limited acception includeth almoſt all the precedent; for what difference ſoever happeneth to any Diſeaſe, muſt neceſſarily happen at ſome time of the Diſeaſe. Phyſitians reckon up four times of a Diſeaſe: The Beginning, the Augmentation, the Conſiſtence, and the Declination. But it muſt be noted that Phyſitians are not ſo exact in diſtinguiſhing the ſeaſons of things as the Philoſophers, for they do not reſtrain the beginning of a Diſeaſe to that point of time wherein the Diſeaſe beginneth; but ſo far they extend it, till there appear ſo great an alteration of

of the Diſeaſe, that it may be known by certain and ſenſible evidences. For the indiviſible beginning is not the time, wherein the Phyſitians help is perfected, and why ſhould that diſtinction of a Diſeaſe be profitable which could not be grounded upon any alteration of it known to us?

Gal n therefore hath rightly deduced the times of Feavers and Inflammations from the underſtandible alteration of them: that is, The beginning from the crudity of the matter cauſing the diſeaſe, the augmentation from the manifeſt coction thereof; the ſtate from the Excretion, and the Declination he computes from the Reduction of the Reliques to the Natural ſtate; and indeed theſe times do ſweetly agree in the general, and differ in particular from the crudity and coction of Feavers and Inflammations. But the truth is, That this diſtinction of times hath not the like ſucceſs in many other diſeaſes: For in theſe Nature doth not ſo regularly proceed from crudity to coction, ſo to expulſion, and at laſt to reduction; neither by theſe can we truely and ſafely know the progreſs of the diſeaſe. Other alterations therefore of theſe Diſeaſes, ſuch as are more cleer and eaſily known, muſt be weighed. Yet we grant that even theſe diſeaſes when they are directed to health, do run thorow thoſe four ſeaſons, the beginning, the augmentation, the ſtate or conſiſtence, and the declination. But when they tend to the deſtruction of the Patient, they ſcarce attain to the conſiſtence, but are daily more and more augmented even to the laſt period of life. Wherefore in theſe the augmentation admitteth the greateſt latitude, neither doth it deſerve a higher difference, or a lower ſubdiviſion: but when an indifferent ſtate of a diſeaſe of the ſame kind is made the Middle term between the beginning and the end of ſuch an augmentation, that we can conveniently

ly

ly distinguish. The encrease into an augmentation on this side, or beyond, or beneath, or above the consistence. An encrease of the first kind about the consistence we may call a *simple encrease*, in regard that it differeth not from the thing it self commonly received by that name; an encrease beyond or above the state, we call an encrease *excrescent*, *excessive*, *transcendent* and *desperate*.

Moreover, Two kinds of declination may be observed in a Disease. The first is legitimate when the Disease simply declineth towards health and recovery. The later is spurious, when a disease remitting changeth into another of a different kind. And so although there are in those that recover health, only four times of a disease, yet in others two more differences may be discerned: Yet it must be noted, that these six times are never to be found in the same disease, or the same patient, but where there is the same disease in the Species in divers subjects. Let us now apply these things to the present affect. We affirm therefore that six differences of this disease do occur in respect of the times thereof. For it hath a beginning, and may be called *incipient*: it hath an encrease, and may be said to be *confirmed*; it hath a state, and then it may be termed *consistent*; it hath an encrease beyond the state, and may be called *desperate*: it hath a true declination, and may be said to be an affect remiting or simply declining; and it hath a spurious declination, and may be called a change, as when it changeth into some other disease. Of all which we will speak in their order.

First, the *Rachites* is called a Disease beginning, when the first Rudiments and impressions thereof are, though very obscurely, first observed, and before there hapneth any manifest extenuation of the first affected parts.

Secondly, This disease is said to be confirmed, when an evident and manifest extenuation of the first affected

parts

parts becomes obvious to the Senſes. And here the *Reader* perceiveth we do not diſtinguiſh theſe two times from crudity and coction, but from another alteration of the body, namely, The Extenuation made in the parts firſt affected; for the beginning of this diſeaſe can no wayes be diſcerned from the encreaſe thereof by crudity and coction: But otherwiſe, ſo far as the nature of the thing is capable of it, we ſhall willingly follow the example of *Galen*, and as he diſtinguiſheth the encreaſe from the beginning by the manifeſt coction, ſo we alſo put a difference between theſe times in this affect from a manifeſt alteration, namely, the extenuation made in the ſaid parts.

Thirdly, This diſeaſe advanced to its conſiſtence, is that, which having attained the higheſt vigor and exaltation, is arreſted, and for a time is neither ſenſibly encreaſed, or leſſened, but continueth at a ſtand.

Fourthly, This diſeaſe exceeding the Mediocrity of the conſiſtence is called deſperate, namely, becauſe in magnitude and vehemence it ſurpaſſeth the very ſtate of the ſame diſeaſe in another Patient indifferently affected, and withal is continually encreaſed, neither is there any hope but that it will daily encreaſe till it hath altogether ſubdued and diſſolved the Patient. For which cauſe this condition of a diſeaſe is termed deſperate.

Fifthly, This diſeaſe is ſaid to be truly remitting or declining, when the Eſſence thereof is by little and little diminiſhed, and when the Signs and Symptoms of it are daily mitigated.

Sixthly, This diſeaſe is ſaid to be illegitimatly declining, or paſſing into another diſeaſe of a diverſe ſpecies, when the Eſſence, Signs and Symptoms thereof are ſo leſſened, that new ones of a different kind and perhaps more outragious appear in their ſtead. Thus the *Rachites* frequently degenerates into a Conſumption, a He-

ctick,

ſtick, and ſometimes perhaps into a ſlow putrid Feaver; yet for the moſt part the ſame diſeaſe doth accompany theſe ſupervening affects to the diſſolution of the Patient And let this ſuffice concerning the differences of this diſeaſe deduced from the Eſſence.

This diſeaſe in like manner in reſpect of the Cauſes is as it were taken into pieces, or divided into parts, namely into a natural affect, and into an after-coming or newly contracted malady. Again, This diſeaſe may be termed natural in a twofold ſenſe: In the firſt properly, As when the Sick is born actually affected with this diſeaſe. In the later improperly, when the Patient at his birth is not actually affected with it, but ſtrongly diſpoſed by his native principles to fall into it. If it pleaſe the Reader to ſummon thoſe things to his memory which were ſaid above concerning the cauſes of this Effect on the Parents parts, he will eaſily conceive the reaſon and foundations of this difference, and conſequently that will excuſe us from any further explication: Only we add, that this difference is of great uſe in the judicial part of cure, which conſiſteth in applications antidotal and preventive, but it is not of ſo great moment in the Method of Cure. In like manner this Affect is meerly coming after, when being fomented by no Natural diſpoſition, it is newly contracted after the birth: and here alſo it is twofold. For it either ſucceedeth ſome foregoing Diſeaſe; or it is immediately produced by an erroneous uſe of the ſix non-Natural things: We have ſufficiently diſcourſed of both, where we hammered out the cauſes of this Diſeaſe after the birth, and thither we direct the Reader.

Again, this Diſeaſe admitteth ſome differences by reaſon of other Diſeaſes wherewith it is conjoyned in the ſame ſubject. It muſt not be expected that we ſhould give in a Catalogue of all Diſeaſes, wherewith this Affect

fect may possibly be conjoyned, we shall only reckon up those which are the usual Companions of this Malady. Some whereof have a certain dependance upon this disease and the causes of it; others have not any, or at least not any worthy of a distinct consideration.

Of the former kind are a *Hydrocephalus*, *the faults of breeding Teeth*, *an Asthma*, *the Ptysick*, *and Hectick feaver*, *a slow*, *and erratical Feaver*, *and the Ascites*, which is that kind of Dropsie when water hath gotten between the flesh and the Skin.

The *Hydrocephalus* hath a great correspondence with this Affect, seeing that this Affect also doth for the most part suppose an increase of the Head preternaturally encreased, and an overplentiful afflux of the Blood unto the Brain by reason of the largeness of the Arteries thither extended. And hereupon it easily comes to pass that the Brain being oppressed with the abundance of the Blood, must sometimes needs suffer the more serous portion thereof (as being the most permeable) to evaporate or sweat out in o the Ventricles and cavities within the *Menynges*, and by consequence to produce the Dropsie of the Brain. But this, as we have already noted, doth alwayes appear.

The *faults of breeding of Teeth* also are sometimes justly ascribed to this Disease going before. For it is well known that they who are affected with this Disease do commonly breed Teeth with extream pain, and many times the Teeth themselves fall out by pieces. But we have above reduced this fault to the unequal nourishment of the parts, and there the Reader may find further satisfaction. In the mean time it must be observed, that a painful breeding of Teeth may likewise precede this Disease, and sustain the force of a cause in reference to this subsequent evil, as we have likewise shewed above.

Moreover, An *Asthma* or difficulty of breathing doth familiarly follow upon this Affect, because the Blood is somewhat cooled in his circulation thorow the first affected parts, and is rendred more thick, viscous, and sluggish in motion, neither is it alwayes perfectly corrected before its return to the right Ventricle of the Heart. Whereupon being unapt for passage, it is powred back from the right Ventricle thorow the Arterious Vein into the substance of the Lungs, and for that Reason doth easily introduce obstructions, hard tumors, difficulty of breathing, sometimes inflammations, impostumes, Ulcers, the Pthisick, the Dropsie of the Lungs, a Hectick Feaver, or else a slow erratical Feaver.

An *Ascites* is also sometimes consociated with this Affect. But whether it proceed from a copious flowing of the Blood to the Bowels of the *Abdomen*, we dare not yet attest for an undoubted truth. Yet certain it is that the flowing of the Blood to this Belly is very copious and sufficiently active in this Disease. For the Liver is great, and the other Bowels are observed to be rather more full than ordinary, than pined away. Whereupon it may happen, that that watry moisture from the Bowels which are oppressed with a fulness may be carried into the hollowness of the *Abdomen*, but we affirm this with a distrustful confidence, because we have not yet given our selves full satisfaction in this matter.

Nevertheless these recited Diseases may happen to Children although the *Rachites* have not preceded, and may be the cause to introduce it. Yea, they may likewise come upon this Disease from other causes; as for example, by some errors in the Regiment of health; although in this case also this Affect may be partly guilty, if it went before: And hurts much of complicated Diseases of the former kind.

But

But of the later kind, namely, ſuch as have little or no dependance upon this Affect, are *a malignant Feaver, the French Pox, the Scurvy, and the Strumatical Affect.*

First it is certain; That *a Malignant Feaver* may come upon this Affect, becauſe for the moſt part it is produced by infection, from which this preſent Affect leaveth not Children free, we add only, that this Feaver doth ſeldom or never owe his Origine to this Diſeaſe.

Secondly, If the *French Pox* chance to be complicated with this Diſeaſe, it is either derived from the Nurſes infection, or from the Parents by Inheritance. For it is a Diſeaſe altogether Diſtinct from this, and hath ſcarce any affinity with it.

Thirdly, The *Scurvy* is ſometimes conjoyned with this Affect. It is either *hereditary*, or perhaps in ſo tender a Conſtitution *contracted by infection*, or laſtly, *it is produced from the indiſcreet and erroneous Regiment of the Infant, and chiefly from the inclemency of the Ayr and Climate where the Child is educated.* For it ſcarce holdeth any greater commerce with this Diſeaſe, then with other Diſeaſes of longer continuance, wherein after the ſame manner the Blood in time contracteth for the moſt part this peculiar infection, yet it muſt be granted, that this Affect doth ſomewhat the more diſpoſe to the *Scurvy* in regard of the want of motion and exerciſe.

Fourthly, and laſtly, The *Strumatical Affect* doth ſometimes aſſociate this evil. But it is credible that it oweth more to other cauſes proper unto it, then to this precedent Diſeaſe. Although we deny not, but this may miniſter ſome occaſion of invading, in as much as it rendreth the humors more viſcous and groſs.

Some other Diſeaſes are peradventure ſometimes complicated with this, but becauſe they happen exceeding

rarely, and have yet ſcarce fallen under our obſervation, we paſs them by, for the preſent and proceed to the ſigns of the Diſeaſe, and the difference of the ſigns.

CHAP. XXI.

The Signs of the Rachites, *and firſt the* Diagnoſtical *Signs.*

WE diſtinguiſh the Signs of the Diſeaſe into three Chapters. The firſt containeth *thoſe Signs which demonſtrate the preſence of the Affect*, and are called *Diagnoſtical*. The ſecond containeth thoſe *that diſtinguiſh among themſelves the differences of the Diſeaſe*, and theſe are called, *Diacritical*, or *Diſcrepant*. The third comprehendeth thoſe Signs *which preſage the event of the Diſeaſe*, and they are termed *Prognoſtical*. In this Chapter we ſhall treat of the firſt kind.

We divide the *Diagnoſtical* Signs into *Pathognomonical* and *Syzedremontal*. And here the Phyſical Authors ſeem to be more ſtrict in the definition of the word *Pathognomonicall*, then the neceſſity of the nature of the matter doth require. For they will have it to be *Inſeparable and* (as Logicians ſpeak) *Proprium quarto modo*, that is, *to agree, omni, ſoli, & ſemper*. Indeed it muſt be granted, that ſuch an Inſeparable Sign, or, *Proprium quarto modo*, muſt be according to the moſt proper ſenſe a *Pathognomonical* Sign. For whether it be preſent, or whether

whether it be abſent, it is ever demonſtratively ſignificant: When it is preſent it certainly witneſſeth the ſpecies of the preſent malady, and being abſent it ſheweth that that ſpecies of the Diſeaſe is not preſent.

But when we truly and ſeriouſly conſider how ſeldom ſuch Signs as theſe occur and of what uſeleſs conſideration they will prove, the knowledge of them being thus reſtrained; we are induced to think of the amplifying of the uſual ſignification of the word. For although the Ancients to ſupply this defect, did ſubſtitute *συνδρομὴν παθογνωμονικὴν* in the place of one true *Path gnomonical* Sign ſtrictly taken, and we our ſelves do moſt willingly accept of, and approve this very ſame *συνδρομὴν*; yet ſeeing that this *συνδρομὴν* doth ſeldom appear from the beginning of the Diſeaſe, and by conſequence ſeldom obtaineth the reputation of an Inſeparable Sign, it neceſſarily followeth, that it alſo can but ſeldom perform the office of a Sign, *quarto modo propriè*, and therefore alſo that this notion is reduced to an extream narrow uſe. We are compelled therefore that we may fully prevent, or avoid this inconvenience to extend ſomewhat higher the ſignification of a *Pathognomonical* Sign; yet ſo, as that we will abate nothing of the Nature and certitude of the ſignification.

Therefore we define a *Pathognomonical* Sign to be ſomewhat appearing about the Patient, which certainly *and infallibly demonſtrates the Species of the Diſeaſe*, And in this extended ſenſe it may be divided into *a Sign Inſeparable*, or *proprium quarto modo*, *and a Sign Separable*; namely, *as being proper only*, *Modo ſecundo*; to wit, *becauſe it is competible only to one kind of Diſeaſe*, *although not always*. In like manner the *Pathognomonical Syndrome*, or *Concourſe of Symptoms* may be divided into two kinds, reſpectively Analogical to thoſe

aforeſaid. For ſometimes it beginneth with the Diſeaſe it ſelf, and doth inſeparably aſſociate to the very laſt period. So the pricking pain of the ſide, and acute Feaver, and difficulty of breathing, and the cough, if they be taken collectively, they are indeed a *Syndrome*, but ſuch an one as is alwayes equivalent to one ſimple *Pathognomonical* Sign of the firſt kind, and doth inſeparably accompany a Pleuriſie from the firſt beginning to the very end. But ſometimes the *Syndrome* or concourſe of Symptoms is not compleat and perfect from the beginning of the Diſeaſe, yet afterwards it is made perfect by the intervention of the other Signs, and doth infallibly denote the ſpecies of the Diſeaſe. For example, in the ſmall Pox upon the firſt beginning of the Diſeaſe, the *Syndrome* is ſo incompleat, that it doth not yet certainly determine the ſpecies of the Diſeaſe; but afterwards the Pox breaking out of the Skin very thick, and tending to maturation, then the *Syndrome* is finiſhed, and the ſpecies of the Diſeaſe is put out of all doubt.

But that a Sign proper to one Diſeaſe alone (although not in the fourth manner) whether it be ſimple and ſolitary, or compounded of a concourſe of many together, may ſuffice, when it is preſent to make a Sign truly *Pathognomonical*: It is manifeſt from hence, becauſe, when it is preſent, it doth as certainly and infallibly denote the ſpecies of the Affect, as a Sign doth, which is proper in the fourth manner. For that which agreeth to one ſpecies only, when it is preſent, doth neceſſarily infer the preſence of that ſpecies alſo. Although therefore that a Sign proper in the ſecond manner, be not Inſeparable, and where it is abſent, doth not determine the abſence of the Diſeaſe, as a Sign doth proper in the fourth manner; yet when it is preſent, it is as we have ſaid of the ſame value and certainty. For Phyſitians do eſteem the dig-

dignity of the Sign by the certainty of the ſignification. For to that purpoſe they enquire out the ſigns of a Diſeaſe, that they may attain to a certain knowledg thereof. Therefore ſeeing that Signs proper in the ſecond manner are equivalent in reſpect of their certainty, when they preſent to Signs proper in the fourth manner: we ſhall here comprehend them under the extended ſignification of *Pathognomonical* Signs.

You may ſay, after this manner many after-appearing Signs may be reduced to the *Pathognomonical* and are confounded with them. Be it ſo, provided that they do infallibly denote the ſpecies of the Diſeaſe. For in this reſpect they are worthy to be ſevered from the other after-appearing Signs, neither will any confuſion follow hereupon in the method of the ſemeiotical art, but rather the value and dignity of the Signs will by that means be more plainly and eaſily obſerved.

Of the *Synedremontal* or *aſſident* Signs we have nothing of moment to ſay, but will directly proceed to the Signs themſelves, as they are to be reduced into order. Yet no exact method muſt be expected from us, becauſe for the moſt part the Signs flow from ſo many ſeveral fountains, that they will ſcarce ſuffer themſelves to be marſhalled into any accurate order. Wherefore, that they may be conſtituted which have ſome affinity among themſelves, we have reduced the ſigns of this Affect to the ſubſequent Method.

We ſhall propound therefore

First, *The Signs which relate to the Animal actions.*

Secondly, *Thoſe which have reference to the irregular Nutrition.*

Thirdly, *Thoſe that concern the Reſpiration.*

Fourthly, *Thoſe that appertain to the Vital Influx.*

Fifthly, *Certain vagabond and fugitive Signs reducible*

cible to no Classis. Under each of which we shall subjoyn the value of the Signs.

First the *Diagnostical* Signs relating to the Animal Actions, are these. *The loosness and softness of the parts, The debility and languidness. And finally, the slothfulness and stupifaction.*

First, A certain laxity and softness, if not a flaccidity of all the first affected parts is usually observed in this affect. The Skin also is soft and smooth to the touch, the musculous flesh is less rigid and firm; the joynts are easily flexible, and many times unable to sustain the body. Whereupon the Body being erected it is bent forwards or backwards, or to the right side or to the left.

Secondly, A certain debility, weakness, and enervation befalleth all the parts subservient to motion. This weakness dependeth much upon the laxity, softness, and litherness of the parts aforesaid: for which reason we have placed those Signs before this, as also this before the slothfulness and stupifaction in the next place to be enumerated, which owe much both to the looseness and softness. Moreover, this debility beginneth from the very first rudiments of the Disease. For if Children be infested within the first year of their age or thereabouts, they go upon their feet later by reason of that weakness, and for the most part they speak before they walk, which amongst us English men, is vulgarly held to be a bad *Omen*. But if they be afflicted with this Disease, after they have begun to walk, by degrees they stand more and more feebly upon their legs, and they often stagger as they are going, and stumble upon every slight occasion: neither are they able to sustain themselvs long upon their legs without sitting, or to move and play up and down with an usual alacrity, till they have rested. Lastly, upon a vehement increase of the Disease they totally lose the use

uſe of their feet; yea, they can ſcarce ſit with an erected poſture, and the weak and feeble Neck doth ſcarcely, or not at all ſuſtain the burthen of the Head.

Thirdly, A kind of ſlothfulneſs and numbneſs doth invade the Joynts preſently after the beginning of the Diſeaſe, and by little and little is increaſed, ſo that dayly they are more and more averſe from motion. The Younger Children who are carried about in their Nurſes arms, when they are delighted and pleaſed with any thing do not laugh ſo heartily, neither do they ſtir themſelves with ſo much vigor, and ſhake and brandiſh their little Joynts, as if they were deſirous to leap out of their Nurſes hands, alſo when they are angred they do not kick ſo fiercely, neither do they cry with ſo much fierceneſs as thoſe who are in health. Being grown greater, and committed to their feet, they run up and down with a wayward unchearfulneſs, they are ſoon weary, and they love to play rather ſitting then ſtanding, neither when they ſit, do they erect their body with vigor, but they bend it ſometimes forwards, ſometimes backwards, and ſometimes on either ſide, ſeeking ſome props to lean upon that may gratifie their ſlothfulneſs. They are not delighted like other Children with the agitation of their bodies, or any violent motion; yea, when the Diſeaſe prevaileth they are averſe from all motion of their limbs: crying as they are at any play that is never ſo little vehement; and being pleaſed again with gentle uſage and quiet reſt. In the interim, unleſs ſome other diſeaſe, Symptom, or cauſe of ſickneſs doth come between, they are moderate in ſleeping and waking, they are ingenious, not ſtupid, but for the moſt part of forward wits, unleſs ſome other impediments ariſe, their countenances are much more compoſed and ſevere than their age requireth, as if they were intent and ruminating upon ſome ſerious matter.

Theſe

These Signs being taken together, unless they result from some evident wariness, or proceed from some primary affect of the Brain (which indeed happeneth very seldom in this tenderness of age) do constitute a sufficient *Pathognomonical* Syndrom of the first kind, and where they are present together, they certainly witness the presence of the Disease, and when they are absent together they infallibly attest the Essence of this Disease. But if at any time a weariſomness do bewray any Feaverish, or other like Signs, they may easily be distinguished from these, both because the reasons of the wariness have gone before, and also because the Signs from thence arising do suddenly break out, and as soon vanish. But in this affect the signs do invade by degrees, and persevere, or else they are daily more encreased. Now the primary Diseases of the Brain are distinguished by their proper Signs. And thus much of the Signs which relate to the Animal Actions.

The Signs which belong to the disproportioned Nourishment of the Parts.

Of how great moment the *Alogotrophy*, or unequal Nourishment of the Parts is in this affect, we have already shewed; we shall here therefore prosecute those signs which in some great measure depend upon it, and we shall present them as if they were to be beheld at one View.

First, there appeareth the unusual bigness of the Head, and the fulness and lively complexion of the Face, compared with the other parts of the Body. But although this Sign may presuppose some motion of the Disease before it shine out, yet is the Disease so obscure before the appearance of it, that it is accounted in a manner unperceivable:

perceivable: Therefore commonly this Sign sheweth it self more or less from the first beginning, and continueth till the departure of the affect, unless (as we have noted before) the pining of those parts supervene from some other cause.

Secondly, The fleshy parts, especially those which are full of Muscles beneath the Head which we have listed among the first affected, in the progress of the Disease are daily more and more worn away, made thin and lean. This Sign doth not presently shew it self from the beginning of the Disease, because it pre-requireth some notable motion of the Disease before it evidently appeareth; yet in time it most certainly is exposed to the senses, and accompanieth the Disease to the last step be it either to life or death; excellently demonstrating the motion and degree of the Disease by its encrease. Moreover this Sign being conjoyned with the former doth at least constitute a *Pathognomonical* Sign of the second kind, that is such an one as is proper to this Disease alone; and where they are present together they infallibly denote the presence of this Disease, although upon their absence they do not equally signifie the absence of the Disease.

Thirdly, Certain swellings and knotty excrescences, about some of the joynts are observed in this affect; these are chiefly conspicuous in the Wrists, and somwhat less in the Ankles. The like Tumors also are in the tops of the Ribs where they are conjoyned with gristles in the Breast. We have noted above in our Anatomical Observations that these tumors are not scituated in the Parts, but in the very bones; although this consideration doth scarce belong to them as Signs, seeing that of themselves they are scarce conspicuous. This Sign doth also suppose some kind of motion of the Disease, neither is it

emergent

emergent a *Principio principiante*, as the Philoſophers phraſe it, yet it offers it ſelf as an object to the ſenſes ſooner than any conſiderable extenuation of the parts. But where it is preſent, it conſtitutes a *Pathognomical* Sign of the Second kind, and without diſpute witneſſeth the Species of the Diſeaſe.

Fourthly, Some Bones wax crooked, eſpecially the Bones called the Shank-bone, and the Fibula or the ſmall Bone in the Leg, then afterwards the greater Shank-bone, and the undermoſt and leſſer of the two long Bones of the Elbow, but not ſo much altogether nor ſo often; ſometimes alſo the Thigh-bone and the Shoulder-bone. Again, there is ſometimes obſerved a certain ſhortning of the Bones and a defective growth of them in reſpect of their longitude. This by chance was omitted above, where we gave the Reaſon of the Organical faults. Yet this affect doth ſeem to depend upon the ſame irregular nouriſhment; namely ſo far forth as the nouriſhment taken in encreaſeth the Bones according to breadth and thickneſs more than length. From hence it comes to paſs that ſome Children long afflicted with this Diſeaſe become Dwarfs. Hither perhaps may be referred that folding in the Wriſts, the Skin it may be having better nouriſhment and more growth than the Bones of thoſe parts, whereupon it muſt needs be contracted in the Wriſts into a folding or wrinkledneſs. Finally, to this place alſo may belong a certain ſticking out of the Bones of the Head, eſpecially of the Bone of the forehead forwards. For it concerneth the common kind of vitiated Figure and the *Alogotophy* of the Bones. Yet this in the Bone of the Forehead doth evidently ſeem to depend upon the free nouriſhment of that Bone in his circumference, wherewith it is coupled to the Bones of the fore part of the Head,

Head, and constitutes that seam called *Sutura Coronalis*, which lieth in the foremost parts thereof. For hereupon it must needs be thrust forwards. And indeed in that place it is plentifully nourished without any difficulty, because this Bone in Children is cartilaginous towards that Seam. And this also was pretermitted above where we discoursed of the Organical faultiness, because we have but lately observed it.

Fifthly, The Teeth come forth both slowly and with trouble, they grow loose upon every slight occasion, sometimes they wax black, and even fall out by pieces. In their stead new ones come again though late and with much pain. This kind of Sign, as also that which we noted in the former Article, may be referred to the *Synedremital* Signs, because neither of these is either perpetually present, or if it be present, it doth not undoubtedly confirm the presence of the Disease.

Some have imagined that the Bones in this Disease are transfigurable like wax; But we have never seen it, neither have we received it from any eye witness who was not of suspected credit. Wherefore we reject this Sign as altogether Fabulous.

Sixthly, The Breast in the higher progression of the Disease, becomes narrow on the sides, and sticking up foreright, so that it may not be unaptly compared to the Keel of a Ship inverted, or the Breast of a Hen or Capon. For on each side of the middle it riseth up into a point, the sides being as it were pressed down. If any demand whether this Sign be solely appropriated and peculiar to this affect; We answer, That the Breast may be a little encreased in an Atrophy or Phtisick, and less than the other parts of the Body, and so by consequence it may be narrower: But it can scarce so fall out according to the change of the Figure without an

Alogotro

Alogotrophy, namely that which is proper to this Diſeaſe. Wherefore this Sign alſo when it is preſent, although the invaſion of it be tardy muſt be reputed a *Pathognomonical* Sign of the ſecond kind, becauſe when it is preſent, it certainly denoteth the Species of the Diſeaſe, though not on the contrary. And thus much of the Signs which have reference to the unequal nouriſhment.

The Signs which belong to Reſpiration.

Firſt, The narrowneſs and ſticking up of the Breaſt already mentioned muſt be hither referred, whereof we then diſcourſed at large.

Secondly, A ſwelling of the *Abdomen*, and an extenſion of the *Hypochondriacal* parts, which hindreth the free motion of the *Diaphragma* downwards, and by conſequence doth ſomewhat interrupt the breathing. Yet it muſt be noted that the *Abdomen* and the *Hypochondries* alſo in reſpect of their outward parts appear very lean and extenuated, but inwardly, namely in thoſe parts which are contained in the Cavity of the *Abdomen*, they ſwell; from whence ariſeth this fulneſs. This ſwelling proceedeth partly from the windineſs of the Stomach and Guts, and partly from the bigneſs of the Liver and other Bowels. Sometimes alſo a watry moiſture into the Cavity of the *Abdomen*, introducing an *Aſcites*, joyneth in this conſpiracy. This Sign is ſeldome abſent, and yet it muſt be numbred among the *Pathognomonical* Signs, becauſe it is common to many other Diſeaſes.

Thirdly, A Cough is frequently preſent in this Affect, as alſo a difficulty of breathing, and many other faults of the Lungs, as Stoppings, hard Tumors, Impoſthumes

humes, Inflammations, a Co-aleſcence of them, with the *Pleura*, and the like; Yet theſe ſcarce deſerve to be reckoned among Signs, becauſe of themſelves (whilſt the Patient breth) they are not ſufficiently conſpicuous.

Fourthly, Children afflicted with this Diſeaſe are averſe from lying upon their Sides either the right or the left, or, at leaſt it is troubleſom to them; namely, either becauſe of the Co-aleſence of the Lungs with the *Pleura*, or by reaſon of ſome Tumor on the contrary ſide, but to lye with their Faces upwards they are very much delighted. And theſe ſigns alſo being taken together will not amount to *Pathognomonical* ſigns of either kind, but *Synedremontal* only and are common to other Diſeaſes.

Signs belonging to the Vital Influx.

First, the Veins and the Arteries are more ſlender than ordinary in the firſt affected parts, and leſs conſpicuous than you would expect in a lean Body. But in the Face (reſpect being had to the gracility aforeſaid in the other part) they exceed the juſt proportion. This perhaps is a *Pathognomonical* ſign, although it be difficult to be obſerved, and indeed not yet ſufficiently ſifted by us.

Secondly, The Pulſe in the Wriſts, and the other affected parts is ſmall and weak, otherwiſe perhaps it is moderate, unleſs when a Feaver is preſent.

Thirdly, A moderate Ligature caſt about the Elbow or the Knee, doth not ſo ſoon ſwell and color the part beneath and above the Ligature with Blood, as it doth in other ſound Children of the ſame age.

Certain

Certain vagabond and wandring Signs.

First, An appetite to Meat and Drink that is either moderate, or unduely weak, unleſs where a Feaver is conjoyned.

Secondly, the Excrements of the Belly and Bladder do commonly reſemble theirs that are in health, unleſs ſome other Diſeaſe do interdict it.

Thirdly; It is obſerved, that thoſe which are ſick of this diſeaſe do abominate ſweet things, as Syrups, and Junkets condited with much Sugar or Honey: Perhaps alſo ſuch things as theſe are hurtful for them, as alſo for thoſe which are troubled with the Scurvy, becauſe they thicken the humors.

Fourthly, Some have obſerved, That they have ſeen ſome Children affected with the *Rachites*, to weigh heavier than others of the ſame age and ſtature. If this be ſo, it muſt be attributed partly to the facility, and partly to the inequality of the Nutrition of the bony ſubſtance in this Affect. For when this weight can ſcarce be aſcribed to the Fleſh, which are here extenuated, it ſeemeth plain that this muſt be attributed to the bony ſubſtance: And ſeeing that the Bones in this Diſeaſe are not yet obſerved to encreaſe beyond meaſure in reſpect of their longitude, it followeth plainly, that it muſt be imputed to the thickneſs of them which is ſuperfluouſly augmented. Theſe are alſo common ſigns, neither do they merit a more worthy eſtimation. And thus much for the *Diagnoſtical Signs*, the *Diacritical* now follow.

CHAP.

CHAP. XXII.

The Signs of the differences of the Rachites, *or the* Diacritical Signs thereof.

WE ſhall inſiſt in the ſame Method we propounded above, where We diſcourſed of the differences, whoſe Signs we now enquire after. We have above deduced five differences from the very Eſſence of the Diſeaſe. The firſt was ſeparable from the parts of the Secondary Eſſence, whether they were preſent or abſent. But no other Signs muſt be expected beſides the very parts *preſent* or *abſent*, which of themſelves are ſubjected to the ſenſes, and therefore they are numbred among the *Diagnoſtical* Signs in the ſecond Claſſis in the precedent Chapter.

The ſecond difference was from the magnitude of the Diſeaſe, the ſigns of this are many and great, or few and gentle and preſent ſigns; namely, to be fetched from among the *Diagnoſtical* Signs above deſcribed.

The third difference was taken from the vehemence of the affect. This is diſtinguiſhed by the *ſlow or quick encreaſe of the* Diagnoſtical *Signs*.

The fourth was from the ſtrength of the Sick; we have ſhewed the way to judge of the ſtrength above: But the difference of a Diſeaſe ariſing from hence hath reſpect unto the *danger*, and therefore we referr the Signs thereof to the *Prognoſticks*.

The fifth difference was deduced from the times of the

Diſeaſe. In which reſpect we have above reckoned up ſix divers apparitions of this Diſeaſe: to wit, *The beginning, the encreaſe, the ſtate or conſiſtence, the encreaſe beyond the ſtate, the true declination, the ſuperiour declination, or the paſſing into another affect.*

It muſt be known that the beginning of this Diſeaſe, beſides the Signs that difference this time from the encreaſe, doth likewiſe require ſome peculiar Signs of the preſence of this Diſeaſe: for it is a time of the greateſt obſcurity, wherein the Diſeaſe doth as it were lurk and hide it ſelf, neither can an unattentive and inexpert Phyſitian eaſily diſtinguiſh it from the *Diagnoſtical* Signs above rehearſed. For by this time moſt of the *Diagnoſtical* Signs aforeſaid do not yet openly break forth; and ſuch as make a diſcovery of themſelves, preſent only ſome obſcure impreſſions to the Phyſitians Obſervation. Therefore the indication of this time requires an accurate and *peculiar collection of the firſt appearing Signs, and a diligent conſideration of them*; but the other times, beſides the *Diagnoſtical* Signs above granted, want only a difference among themſelves, which is performed by an eaſie induſtry. Wherefore in the firſt place we will declare the Signs of the preſence of this Diſeaſe, being newly begun or rather beginning, and then the difference between that and the encreaſe.

The Signs of the preſent Diſeaſe of the Rachites *newly begun.*

First, *Diligent Obſervation muſt be employed about the three kinds of Signs aſcribed above to the Animal Actions*; namely, the looſeneſs and ſoftneſs of the parts, the weakneſs and languidneſs, the ſlothfulneſs and numneſs. For theſe do in a remiſs degree, and ſub-obſcurely yield

yield advantage to circumspection and heedfulness presently a *principio principiantis*, as they phrase it.

Secondly, *The colour must be considered, and the habit of the Head and Face in relation to the Joynts.* For if the colour or the habit be more fresh and lively in those than in these, it presenteth a strong suspition that this Disease hath taken root. For although the Bulk of the Head which is evidently encreased, and also the extenuation of the parts affected do pre-require some considerable motion and duration of the Disease before they appear, yet from the beginning a certain difference may be observed by an accurate attention or intuition in respect of the heat and the habit of these parts compared one with another.

Thirdly, *The Wrists and the extremities of the Ribs must be noted.* For before the end of the beginning certain rudiments of knurls or knots begin to appear in the Wrists, and Excrescencies also in the tops of the Ribs.

Fourthly, *A kind of swelled fulness and stretching the belly* is conspicuous immediately after the beginning, especially in the *Hypochondriacal* parts. For the magnitude of the Belly compared with the magnitude of the Brest exceeds the just and due proportion.

Now these Signs collectively taken do assuredly demonstrate the presence of the Disease even from the very beginning. But if no sensible and manifest extenuation of the first affected parts do appear at the same time, in that very respect it is clearly distinguished from the encrease thereof.

The Signs of the other times are with ease differenced from one another by the descriptions of those times already laid down; yet because they may point to this place, and be dispatched in a word, we shall not decline the Annotation of them.

All those Signs which appeared at the beginning become more intense and evident in the encrease of the Disease, and many other and more grievous are daily accumulated. This time, as hath been said, is distinguished by the manifest extenuation of the first affected parts, but after the consistence by the continual aggravation of the Symptomes and Signs aforesaid.

In the state of the Disease the Signs and Symptomes are most outragious and conspicuous. But so long as this time lasteth it neither manifestly encreaseth or decreaseth.

In the Increase beyond the State, the Signs and Symptomes exceed that condition which they retained in the indifferent State, *both in respect of their magnitude and vehemence, and likewise in respect of the defection of the Spirits, and from that time forwards they daily grow worse and worse*; for which considerations this time is distinguished, as well from the ordinary encrease, as from the means of the consistence.

But in a true declination *A kind of simple remission of the Symptomes and Signs tending to a perfect restauration of health* begins to discover it self; no other Signs of the invasion of any other Disease appearing.

On the contrary, in a spurious and illegitimate declination, *Other Signs of a new succeeding affect are involved and complicated with the Signs and Symptomes of this Disease*: and these are distinguished according to the various condition thereof, and must be fetched from their proper fountains, and ought not to be expected here. Moreover, if any particular Signs of any of these times do occurr, which concern the event of the Disease, they must be reserved among the *Prognosticks*; and thus much of the Signs of the Differences of this affect deduced from the Essence thereof.

The

The Differences of the Causes distinguish the Disease into Natural and Accidental, and the Natural again into that which is properly so called, and that which is so termed improperly. A Natural Disease properly so called, because it is supposed to be actually present from the very Birth, requireth no other Signs than the *Diagnostical* recited in the former Chapter. For upon their appearance presently after the Birth the Disease is certainly known to be Natural.

But if those Signs appear not presently after their Birth, yet a Natural dispositedness to this Disease may be inherent from the Birth, which afterwards actually breaketh out, and the disease produced by it, may (though with some impropriety) be termed Natural, in regard of that dependance upon the Native faultiness. A Natural Disease in this sense, requireth other Signs than those which we have recited above, to distinguish it from the same Disease when it is altogether and plainly accidental.

The Signs of a Natural Disease improperly so called.

First, A weak and sickly Constitution, and the Diseases of both or either of the Parents: As a cold and moist distemper, a *Cacochymy*, especially the Plegmatical, a *Cachexy*, a Dropsie, an *Atrophy*, the Ptisick, the *Gonorrhea*, the Whites, the *Venereous Pox*, the Scurvy, and the like affects.

Secondly, *The Slothfulness, Effeminacy, and Sedentary life of the Parents.*

Thirdly, *The Errors of the Mother during her going with Child*, all which things we have discussed above more at large, when we examined the Causes of this Disease in relation to the Parents.

Fourthly, *The Debility of the new-born Infant when it proceedeth not from the difficulty and labour of the Birth.*

Fifthly, *The invasion of the Disease before he is exactly a year old*; for this argueth some Natural disposition to the same.

Sixthly, *If the elder Brothers or Sisters were before afflicted with the same Disease*; for then it may well be suspected that some Infection was contracted from the Parents.

Seventhly, *If no remarkible error was committed in looking to the Child after the Birth, and before the invasion of the present Disease.* Of which we have spoken above in the Chapter of the Causes after the Birth.

Eighthly, *If this affect hath not succeeded some other, which was apt to leave this behind it.* Of the Diseases of this kind we have also discoursed above.

The Signs of a Disease newly and totally contracted after the Birth, are *in a manner contrary to these*, and therefore we shall only run them over.

First, *If the Disease cannot be imputed to any weak or diseased Constitution of the Parents, or their manner of life, or the errors of their customs.*

Secondly, *If no debility appeared presently after the Birth.*

Thirdly, *If the Disease began when the Child was above eighteen months old.*

Fourthly, *If the Brothers and Sisters were free from the Disease.*

Fifthly, *If any notorious errors were committed about the Child after the Birth.*

Sixthly, *If any Disease went before which might occasion a suspition that this followed it.* If there be a confluence of most or all of these Signs, they do sufficiently witness

witneſs that this Diſeaſe muſt not be attributed to any Natural Infection, but to the future Errors and Irregularities. And thus much of the differences of this Diſeaſe, in reſpect of the Cauſes.

Laſtly, Some differences happen to this Diſeaſe by reaſon of other Diſeaſes, wherewith they are peradventure complicated; in which caſe, beſides the *Diagnoſtical* Signs already reckoned, ſome other may be deſired as peculiarly proper to the complicated Diſeaſe. Nevertheleſs an accurate Deſcription of them cannot be here expected, becauſe for the moſt part they are the ſame which are every where attributed to thoſe Diſeaſes by practical Writers. But becauſe ſome Diſeaſes do more frequently accompany this than others, we will briefly look into their Signs.

Firſt therefore a *Hydrocephalus* or Dropſie in the Head being complicated with this affect needeth ſometimes no Signs to make it known, but is ſufficiently, yea abundantly manifeſt of it ſelf: namely, either by *the exceeding magnitude of the head*, or *by the Water that is outwardly contained under the Pericranium* (which notwithſtanding we ſuppoſe doth very rarely happen) or *by ſome extreme opening and wideneſs of the ſeams in the Head, water having gotten into them, and lifting up the* Dura Mater, *ſo that a ſoft and wateriſh tumour is outwardly perceivable by the touch in the ſpaces between the Bones.* Many times the *Hydrocephalus* is ſomewhat obſcure and requireth Signs to diſcover it. Firſt, *Therefore all the inward and outward ſenſes are more dull than otherwiſe they uſe to be in this affect.* Secondly, *The magnitude of the Head is ſometimes greater than at other times.* Thirdly, *The* Sutures, *or ſeams in the accuſtomed places do gape more wide, and are cloſed again more ſlowly than they are wont to be.* Fourthly, *The Bone in the Forehead is*

were outwardly sticking out, and in the other Bones of the Head you may observe certain inequalities and bunchings out of an unusual bigness.

Secondly, *The conjoyned evils of breeding Teeth are thus known.* 1. *If the accustomed time of breeding Teeth be either approching, or now at hand*; for from hence ariseth some suspition of pain from thence proceeding. This time ordinarily beginneth in the seventh month after the birth, and continueth till the Child be a year and six months old, and longer, if the Teeth come slowly; which hapneth very commonly in this affect; and it endeth when the number of the Teeth is complete. 2. Children to mitigate the raging pain do use *to put their Fingers in their Mouths*, according to that old saying, *ubi dolor, ibi digitus.* 3. *The Gums wax white on that side where the Tooth is to break out, and are somewhat hot in the touch.* 4. *The Teeth that come forth sometimes wax black or are loose, or fall out by pieces.* 5. *To these you may add watchings, the loosenes of the Belly, Feavers and Convulsions*, which notwithstanding are chanceable Symptomes.

Thirdly, *An Asthma is perceived by the very difficulty of breathing*, when it doth not proceed from the stretching and fulness of the lowest Belly. But if withall there be a *swelling* or *Imposthume, and that in either side of the Lungs, they can scarce endure to lie on the contrary side*; but *if it be on both sides, then they desire to lie erect or with their Faces upwards.* The same thing for the most part hapneth *in an Inflammation, with a growing together of the Lungs with the Pleura*, as also in a *Pleurisie*, but *then they are added, an acute Feaver, cough and spitting of Blood*, moreover in a Pleurisie *a pricking pain in the side.* The *Ptisick* is known *by a diuturnal Cough, and a roundish and sometimes a purulent spittle*

(although

(although indeed Children do ſeldom ſpit out, becauſe that matter which the Cough fetches up into the Mouth they ſwallow by the Oeſophagus) alſo *by a putrid Feaver* conjoyned, *and by a ſudden Colliquation in the parts. An Aſcites* is diſcovered *by the unreaſonable bigneſs of the Abdomen.*

Fourthly, *A Hectick Feaver* bewrayeth it ſelf *by a continual heat, being ſom what more vehement than that in a Quotidian Ague*, eſpecially *about the Arteries, and ſtill encreaſeth after the receiving of meat*; alſo *by the ſwift and ſpeedy conſumption of the parts: a putrid Feaver is known by the urin being at the beginning crude, afterwards more concocted, then alſo from the extream high colour of it.* Moreover, *if it be an intermitting Ague, it is diſcernable by the inequality of the heat, the external parts being at the beginning extream cold, and afterwards exceſſive hot*; alſo *from the fits either conſtant or irratical*; again, *by the contraction of the Pulſe upon the approach of the fit, afterwards unduly encreaſed. A continual Feaver is known by an intenſive and un-intermitting heat*, alſo *by thirſt, roughneſs of the Mouth, and the altered colour of the Tongue, and the like.*

Fifthly, *The Venereous Pox is ſuppoſed* to meet in complication, *if either of the Parents or the Nurſe were before infected*; *if any ulcers appear in the Head, Mouth and Noſtrils*; *or if any eminent and cruſted wheals break out, eſpecially ſuch as ordinary Medicines cannot ſubdue: if hard tumors grow conſpicuous, or knots defiling the Bones in the Fingers with rottenneſs, or any other parts*; *if unquietneſs and bitter pains in the night-time alarum the ſick*; *or if Bubos break out in the Groyn.*

Sixthly, The *Scurvy* complicated with this affect hath theſe ſigns: 1. *They that labour under this affect do impatiently indure Purgations*; *but they who had only affect'd*

fected with the Rachites *do easily tolerate the same.* 2. *They are much offended with violent exercises, neither can they at all endure them.* But although in this affect alone, there be a kind of slothfulness and aversation from exercise, yet exercise doth not so manifestly, at least not altogether so manifestly hurt them, as when the *Scurvy* is conjoyned with the *Rachites.* 3. *upon any concitated and vehement motion they draw not breath without much difficulty, they are vexed with diverse pains running through their Joynts, and these they give warning of by their crying, the motion of the Pulse is frequent and unequal, and sometimes they are troubled with a Palpitation of the Heart, or threatned with a Lypothymie, which Affects are for the most part soon mitigated, or altogether appeased by laying them down to rest.* 4. *Tumours do very commonly appear in the Guns.* 5. *The urin upon the absence of the accustomed Feaver is much more intense and encreased.*

Seventhly, *The Strumatical Affect,* if extremely complicated with the *Rachites,* is sufficiently conspicuous *by Swellings obvious to the senses*; yea, where many knotty Excrescences do outwardly occurr, it may be justly suspected that the like Tumors do lurk in the Bowels. But if the knots grow inwardly only, they are scarce discernable by any certain sign; for that Rule which some have observed, namly, That those which have short Necks, low and narrow Foreheads, with compressed Temples, and wide Cheek-bones, are subject to these strumatical Tumors and Excrescencies, is too uncertain and fallible; Others affirm, That Purging Medicines taken otherwise in a just proportion will scarce work with those who are thus affected; but we answer from our own Experience That it is sometimes only, and not always true. Thus much of the signs of the differences.

CHAP.

CHAP. XXIII.

The Prognostical Signs in the Disease of the Rachites.

THis Disease in its *kind is not mortal*, yea sometimes it is so light and gentle, as the Children affected therewith have been restored to health by the sole benefit of Age, the Vital heat being encreased and summoned forth to the external parts by the force of frequent Exercises. Yet it sometimes so vehemently prevaileth, that the imminent danger of life can scarce, yea sometimes cannot be prevented by the best and most prudent applications. Wherefore it is very necessary that a Physitian should first diligently contemplate the Prognostical Signs of a disease, that he may be the better instructed to foresee the several events of it. But in general those things which abet the Disease, that is, all such things as war against Nature, require a contrary consideration, and as these are the stronger and they the weaker, so much the more grievous and pernitious is the Disease. But because it is not obvious to every one to give an accurate Judgment of Particulars from this General Admonition, it will not be impertinent or unprofitable to insert some particular and special Rules and observations hitherto belonging.

First, *This Disease properly Natural, or that which invadeth before the birth, is the most dangerous, and seldom, if ever, ends in health.* For it argueth a deprivation of

of the Seminary principles, and by consequence that the Spirits are very infirm; besides it insinuateth a vehemency in the causes.

Secondly, *The more early the invasion is after the Birth, the more dangerous* (cæteris paribus) *the Disease is*: for the Spirits are so much the weaker. In like manner, *The Elder Children, and such as go up and down, are more easily cured then young Infants that cannot use their legs.*

Thirdly, *A Disease improperly so called*; namely, that which in part dependeth upon the Natural Inclination, *is more dangerous than that which is contracted by the meere error of the Nurse or Mother.*

Fourthly, *This Disease proceeding from some other fore-going Affects, is more dangerous than that which is introduced by an erroneous Regiment of health*; For it implyeth a precedent dejection of the Spirits.

Fifthly, Some have observed, *That Infants who have had Red Haired women to their Nurses, have been most obnoxious to this affect.* Yet we indeed suspect this rule of some fallibility.

Sixthly, Some affirm, *That Girls are more frequently infested with this Disease than Boy, and more easily cured.* The truth is, we have not yet had any unsuspected experience of this. Yet we grant that Girls are of a more cold and moist temperament, which holdeth the greatest correspondency with this Disease, and for that reason probable it is that the Female Sex may be affected with the lighter causes, and for the same reason also be the sooner restored.

Seventhly, *This Disease doth chiefly invade the Cradles*

ties of the Gentry, especially of those who live at ease, and fare deliciously; then of the poorer sort, by reason of the manifold and various errors which necessity introduceth as well in the Diet of the Parents, as the Regiment of their Children; but it findeth the most difficult access unto those *who are privileged from such assaults by a mediocrity of fortune, and accustomed to undergo some pains-taking and labour*, and are not destitute of necessary means to sustain life and a healthful competency to prevent indisposition.

Eighthly, *By how much the more the first affected parts are extenuated, so much the more difficult* cæteris paribus *is the cure of the Disease.*

Ninthly, *The greater the Head is, the longer and the harder is the Cure.* When therefore the Bone of the Forehead sticks much out forwards, it portendeth at least a long continuance of the Disease; the same also do the other irregular stickings out of the other Bones of the Head.

Tenthly, *The weaker the Back-bone, the greater and more dangerous is the Affect.* Wherefore they which are unwilling to sit upright, much more they which are not able to sit upright, but most of all they whose feeble Necks cannot underprop the burden of the Head, are in hazard of their lives. Moreover, by the *Diuturnal* weakness and bending of the Back-bone, Children become Crook-back'd, or some other wayes incurvated, and the trunk of the Body is afterwards scarce reducible to its Native Figure.

Eleventhly, *Great Swellings in the Bones of the Wrists and the ends of the Ribs presage the continuance of the Disease.* Moreover, *The crookedness of the Shank-bone, Shoulder-bone, or the Bone in the Arm, prognosticate no less.* Again, *The greater that the inflection of the Joints*

is, the more difficult and retarded will the restauration be.

Twelfthly, They whose Thigh and shank-bones are much encreased, rather according to latitude and thickness, then according to longitude, for the most part become dwarfs.

13ly. They who draw their Knees upwards and unwillingly, suffer them to be extended, recover not without some difficulty.

14ly. When the Teeth wax black or fall out by pitts, here is some danger, and so much the more, the later they come again, that is, others in their room.

15ly. All they who attain to the consistence of the Disease, escape the danger of it, being carefully look't unto, unless perhaps some other Disease be conjoyned with it, or do accidentally come after, and disturb the Patient with a higher encrease. In like manner the declination of the Symptomes doth assuredly promise a restitution of health.

16ly. If an Hydrocephalus be complicated with the Rachites it ever importeth great danger. But if it prevail so far, as that the Sutures of the Brain-pan do gape, and that some water gotten into the middle Spaces doth swell the Dura mater into a waterish and soft Tumor, it is mortal.

17ly. A painful and laborious breeding of Teeth comes sometimes accompanied with most vehement Symptoms, and even threateth death. But commonly it is violent and ceaseth in a short time; however, so long as it is conjoyned, it much accelerates the motion of the Disease. But the Dog-Teeth come forth with more vexation, than the rest and portend more danger.

18ly. An Asthma (especially the Orthopny, when the Patient cannot draw breath, but with an erected neck

neck, *and that difficulty of breathing when he cannot lie on either side*) *is very dangerous.* For that prompteth to a ſuſpition of ſome Tumor, Impoſthume, Pluriſie, or Inflammation of the Lungs, or ſome growing of the Lungs with the Pleura, all which affects want not their danger.

19ly. *If the* Ptiſick *be complicated with this Affect, it is for the moſt part mortal, eſpecially if one and the ſame ulcer of the Lungs continue above forty days.*

20. *We affirm that if this Diſeaſe be of any long continuance it eaſily changeth into the Ptiſick, or a Conſumption, or at leaſt commonly brings a Conſumption to the deſtruction of the Sick, unleſs ſome other affect peradventure, or grievous ſymptome do intervene, and prevent the conſumption by haſtning death; as a Convulſion, the loud Cough, the ſwelling of the Lungs,* (*vulgarly called,* THE RISING OF THE LIGHTS) *a continual Feaver, a Pleuriſie,* &c.

In the next place, *We aſſert, That if a Dropſie of the Lungs, or an* Aſcites *be complicated with the* Rachites, *it portends a deſperate and deplorable condition.*

Again, *An Hectick, ſlow, putrid, and eſpecially a continual Feaver, conſuming the firſt affected parts doth vehemently haſten the motion of this Diſeaſe, and render it the more dangerous.*

Alſo, *If the Venereous* Pox *be conſociated with the* Rachites, *be it hereditary or contracted by infection, it is almoſt uncapable of remedy.*

The Scurvy *likewiſe conjoyned doth very much retard the cure, though leſs then the* Pox.

In like manner *Strumatical tumors either internal or external do not very much ſuſpend the hopes of cure, though otherwiſe of themſelves they are not eaſily ſubdued in this tender age.* For the external

parts

parts are exulcerated, or inflamed with insupportable pain, and do vehemently irritate Nature, and waft the Spirits, but the internal much more, especially, if they invade the more noble parts, or bring molestation to the adjacent members with their weight and bulk.

Moreover, *Whosoever are not perfectly cured before the first five years of their age be spun out, they afterwards for the most part live miserable and sickly, and being either Asthmatical or Cachectical or Pysical they die before they arrive to the consistence of their age, or else they grow deformed, crooked, and dwarfish.*

If Scabs, wheals, pimples, or the itch come after this Affect, it doth hopefully expedite the cure.

Finally, *They which easily endure any kind of agitation of the Body,* cæteris paribus, *are cured without difficulty.*

Thus at length we have finished the History of the three kinds of Signs, according to the best faith of our observations hitherto. In the next place we shall proceed to the Method of practice, which comprehendeth the prevention and cure of this Disease.

CHAP.

CHAP. XXV.

The Method to practice and Indications in general.

THE Method to practice is divided into the *Therapeutical* and the *Prophylactical* part, or *the Curative and the Preſervative.* We ſhall diſcourſe of the former in this Chapter, although perhaps we ſhall here alſo propound ſome things which are common both to the *Prophylactical* part, and the *Eugieihal.* But the *Prophylactical* in particular and uncommunicated we reſerve for the cloſe of this Tractate.

The Curative part is uſually called the *Method* of *Cure*, whereof, as of every other art, there are two general inſtruments, namely, *Reaſon* and *Experience*, the uniting whereof comprehendeth the whole skil of the Artiſt. Now by experience we underſtand *not only the Hiſtory of one or more Diſeaſes, and the ſucceſs of Medicines, but alſo the obſervation*; that is, *the application of the Hiſtories unto thoſe things, which reaſon dictates in the ſame affect, and that by way of comprobation or diſallowance.* In like manner, by reaſon we mean *every operation of the mind*, ſo as we do not only *comprehend the third*, namely, *ratiocination either demonſtrative, or probable and Analogal*, but alſo *the firſt and ſecond*, that is, *a ſimple apprehenſion, comprehenſion, and diviſion.* For this

part of Medicine includeth or rather presupposeth the *Physiology*, *Pathology and Semeiotical* part, which certainly require a manifold exercise of every operation of the understanding. Again, no man can understand any proposition, who doth not first apprehend the simple terms thereof, nor any Syllogism, who is ignorant of the Propositions of which it consisteth; so that it is manifest that every operation of the mind doth meet with an employment.

Indication, That noble instrument of the Method of Cure (by the use whereof the Dogmatical Physitians do principally glory to discriminate their Sect from the Empericks) doth likewise vindicate a station among the parts of reason. But because some things both difficult and obscure do occur concerning this instrument which have not received an unfolding and full illustration, from the *Neotericks* themselves, we judge it expedient here briefly to unvail them by an examination. We will enquire therefore.

First, *what is Indication?*

Secondly, *unto which operation of the understanding it relateth?*

Thirdly, *Into what kinds and differences it is distributed?*

As for the first, although perhaps many significations of this word may be found among Authors, yet that is the best and most proper which is delivered by *Galen*, in his book *de Method. Meden. Indication* (saith he) is an insinuation or declaration of the consequence, that is of something to be done. In this sense *Indication* may be defined and described to be an objective action of the *Indicant* relatively considered, which representeth to the understanding the thing *Indicated*, that is, what may be helpful what hurtful, and by consequence what must be elc-

elected and applied, what forsaken and avoided; that this Description or Definition may be the better understood, let us further examine what is here signified by the *Indicant*? what by the thing indicated? what the action of the *Indicant* is? of what use distinction is of the thing indicated into helpful or hurtful, into that which must be chosen, and that which must be refused?

First, Although those terms *Indication*, *Indicant*, *Indicatum*, or the thing Indicated may peradventure be extended to other Arts and Sciences, yet because it hath hitherto been only appropriated by the Industry of Physitians (especially of *Galen*) to the Method of Practice, their definitions which we shall here declare, shall have respect only to this Method, all other use of them being pretermitted.

The General Definition therefore of the *Indicant* must be derived from the most general Nature which doth indicate in our Art. The *Indicant* therefore may be defined in general to be a state of the Body as it is fluxible or moveable, or rather, as it is actually influx or motion, relatively considered, namely, as it intimateth what is to be done in that particular.

First, We affirm that the *Indicant* doth perpetually imply some state or condition of the Body; wherefore because that which is without the Body, and doth not yet affect it, is no state or condition of the Body, it can scarce rightly be said to indicate. The external cause therefore, which doth not yet affect the Body, is not the *Indicant*, although the aversion of it may possibly be the thing indicated. Secondly, the state of the Body as it is frail, or movable, or rather as it is actually in motion, is required to the Essence of the *Indicant*. For as *Galen* most luculently proveth to *Thrasyb.* If our Bo-

dy were immutable and perpetual, there were no need of Medicine, but because the heat doth continually feed upon the moisture, and because health it self in the most perfect state is frail and fluxible, yea actually fluitant, and in some measure is already flowed away, manifest it is that the Physitians Art and the Practical Duty of the Physitian are both exceeding requisite. For if the state of the Body and the alteration thereof be only considered absolutely, a bare and naked speculation only resulteth from thence: but if it be considered in order to that which is to be done, whereby the Physitian may rightly execute his duty concerning that state, presently it meriteth the denomination of a Practical Instrument, and is invested with the nature of an *Indicant*. For such a state doth indicate; as it is frail and in motion, that care must be every way had of the health, and that that care must be exercised and practised with all diligence and circumspection. And consequently this very general *Indicant* doth point out that which the general scope of the Physitians sought after, but it must not be expected that the consideration of the most general *Indicant* can represent any other thing than a most general action correspondent to the general scope. For if the Physitian desireth a higher prosecution of the particular scope, he ought to descend to more particular *Indicants*.

Secondly, The thing Indicated is a Medical Action required on the part of the *Indicant*. For the *Indicant* primarily and formally denoteth the action, but secondarily and by consequence the instrument wherewith the action is perfected. Therefore by way of an appendix let us add to the proposed Definition, that secondarily, by consequence, and in a concrete acception, it includeth the Instrument wherewith that action is accomplish'd.

First,

First, We ſay, that the thing indicated is an action. For the Phyſitian uſeth Indication to that end, that from thence he may collect what is to be done: you will ſay perhaps, that when the criſis is at hand or legitimately proceedeth, the thing indicated is an abſtinence from, or a ſuſpenſion of the action, and not the action it ſelf.

We anſwer, that this abſtinence in that very regard that it is enjoyned adviſedly and according to art, is evidently contained under ſome kind of notion of a Medical Action; and the ſame is to be ſaid of any kind of prohibition of any action in our Art.

Secondly, We ſay that the thing indicated is a Medical Action, that is directing the Action to health. For the end of Medicine is health, and therefore that Action which doth aim at health is rightly termed a Medical Action.

Thirdly, We ſay, That the thing Indicated is an Action requiſite and importing, at leaſt in reſpect of the *Indicant*. For every indicated action ought not preſently to be reduced to Practice, neither can it be ſimply ſaid to be requiſite, but only in reference to the Indicant: wherefore it muſt be expoſed to a further examination before the exerciſe of it can be reſolved on; and if neither the Spirits do diſſwade, nor no other contra-Indicant doth more potently reſiſt, then it is ſimply requiſite, and muſt be put in practice in its due time, with all poſſible convenience. And hereupon the thing indicated is rightly diſtinguiſhed into profitable and unprofitable. The thing indicated becomes unprofitable either by defect of Medical matter, wherewith it ſhould be accompliſhed; or by the preſence of a ſtronger Prohibent, or contra-Indicant.

Again, A thing indicated and profitable is rightly

ſubdivided into an *Indicate*, *Circumſtantiate*, and *non-Circumſtantiate*. The firſt by which is meant an Action rightly clothed with circumſtances muſt be proſecuted without any delay. The ſecond muſt be deferred untill it have perfectly acquired due circumſtances. We ſay fourthly, that a thing indicated in a concrete and ſecondary ſenſe doth alſo include the Inſtrument, whereby the Indicated Action is perfected, As for example, the ſtate of health doth primarily and formally indicate an act of conſervation, but ſecondarily and by conſequence it doth withall indicate the Inſtrument, whereby we conſerve it. This paſſage of an Indication from the Action to the Inſtrument doth not ſeem to depend upon the ſole vertue of the Indicant, but in part alſo upon ſome general certain and commonly received principles, as like things are conſerved by the like, things contrary are cured by their contraries, and therefore we induſtriouſly ſaid that ſuch an Inſtrument is the Indication or thing Indicated in a Secondary ſenſe, and by conſequence inferred, and becauſe it includeth the Action together with the Inſtrument, we termed it ſo likewiſe in a concrete ſignification.

Moreover, Seeing that the practical duty of a Phyſitian hath great affinity with the Indicated action; we ſhall here conſider wherein they unite in ſome agreement, and wherein they differ among themſelves. The general Duty of a Phyſitian is to attain (as much as in him lies) the end of his Art, namely Health. And that ſame obtaining of Health is in a manner the moſt general Indicated Action, yet this is diſtinguiſhed from the general Duty of a Phyſitian, becauſe the Purchaſe, and reſtauration of Health is not alwayes attainable. Therefore although the obtaining of Health be perpetually Indicated; yet when that is impoſſible, the Phyſi-

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tian is disobliged, seeing that no man is bound to impossibilities, and so consequently, it is no part of his Duty. In like manner an Indicated Action is sometimes unprofitable for the reasons before alledged, in which case it appertaineth not to the Duty of the Physitian. Again, An Indicated action, though when it is profitable it must be performed in its place, yet so long as it continues un-apparel'd and devested of due circumstances, it presseth not the Duty of a Physitian. For it is the part of a Physitian not only to prescribe things profitable in the Species, but they must be such, regard being had to time, order, and other conditions of a just and regular administration. Finally a profitable Indicated Action being robbed in all its due circumstances doth truly exact the Duty of a Physitian. For a Physitian is obliged to execute such actions, and only such, at least when they are conspicuous.

Besides; the scope and intentions of the Physitian having a diverse respect to the Indicated Actions and the Duties of the Physitian, and holding some commerce with each of them, we shall likewise here consider in what respect this falleth out. But in the very entrance into this Discourse these scopes seem sometimes to be properly distinguishable into the little notions or forms of enquiry after every Duty of a Physitian, and the things themselves to be enquired after. The forms of enquiry are nothing else but apt Questions or Interrogations, which subdivide every Duty of a Physitian into so many parts, as it containeth to be distinctly sifted and examined. *Argenterius* reckons up nine Forms of this kind: First, Whether? Secondly, What? Thirdly, With what matter? Fourthly, How much? Fifthly, Of what kind? Sixthly, After what manner? Seventhly, When? Eighthly, Where? Ninethly, In

what order a thing must be done? Others contract these to fewer Heads, but for further satisfaction the understanding Reader may consult with the Books. The real Scopes or things themselves to be enquired are those very parts, into which each Duty of a Physitian may be aptly distinguished. They are therefore so many in number as there are found parts in that duty to be examined. These Scopes thus found out differ not really, but only in reason from those that are yet to be found out, namely in respect of the diverse relation to the intellect seeking, and actually understanding. From hence it appeareth what affinity there is between these Scopes and the Duty of a Physitian, and also the indicated actions. For the notional Scopes or forms of Scopes, and the things themselves to be enquired after under those forms do both aim at the same mark, namely the distinct invention of all the parts of a Physitians Duty. But the things to be sought out are the parts themselves of the Duty aptly separated and disjoyned from one another the better to facilitate the invention and examination.

Moreover, Those parts of this Duty, in as much as they are found out by the force of Indication, are the very indicated Actions; so that the Scopes invented by the Indication, and the Indicated Actions do really signifie the same things; We say really, because the Scopes even when found out differ in reason from them as they are Scopes, seeing that besides the Indicated Actions they seem to note together an intention of prosecuting the same Actions, as the Scopes not yet found out do intimate an intention of enquiring into them. Thus much of Indicates or things Indicated.

Thirdly, *The action of an* Indicant *is* Objective *and* Indi-

Indicant, *as an Object beſides it ſelf, doth in ſome ſort inſinuate another thing to the underſtanding.* Perhaps ſome may wonder, *how an Object can repreſent any other thing beſides it ſelf?*

we anſwer, Such is the Nature of relatives, that (as ſuch) they cannot be conceived without an implication of their correlatives. For one relative in his proper conſideration doth at leaſt obliquely involve the conſideration of another, and by what means it eaſily uſhereth the underſtanding to the knowledge of the other.

Some may reply, *If the force of the* Indication *be built upon the meer relation of the* Indicant *to the* Indicatum, *How comes it to paſs that the uſe thereof is reſtrained ſolely to the Art of Medicine?*

To this we anſwer, We deny not, but this inſtrument may be extended to other Arts and Sciences, as we have before inſinuated. For in moral Philoſophy it is lawful to ſay, that Vertue doth Indicate the protection of her ſelf, and Vice the ſuppreſſion of it ſelf. But neither doth this kind of relation conſiſt only between the States of things, and the Actions thereunto belonging, but alſo between the terms meerly ſpeculative, as twice two are four, a man is not a horſe. But here we conſider the *Indication* and the efficacy of the *Indicant* only in order to the Method of Phyſick, ſo as it will not be here needful to extend the uſe of this inſtrument further, neither indeed did *Galen*, becauſe it would contribute little to the ſcope thereof. Yet we affirm, that every relation is not a ſufficient *baſis* of an *Indication*, but it muſt be ſuch, as hath either an evident conformity and agreement between the *Indicant* and *Indicatum*, whereby they may be fitly marſhalled into a propoſition of undoubted truth; or a diſparity and repugnance of them among themſelves that

that ſo they may aptly be divided from one another; that is, they may be diſpoſed into a negative propoſition equally certain. Now becauſe the propoſitions elected by this indication are certain and evident, not needing any higher proof: from thence it is manifeſt that every underſtanding that is maſter of it ſelf, not clouded with a vail of prejudice, nor wittingly enſnared with ſceptical Sophiſms and fallacies, muſt neceſſarily pay an aſſent unto them ſo ſoon as he underſtandeth the terms. Moreover, the Scepticks themſelves, though in their diſputations they will lie in wait to traverſe any variety, how manifeſt ſoever it be, and buſy themſelves to equal the moſt certain principles with things extreamly doubtful, yet in performing the neceſſaries of life, ſeeing that they relieve hunger by food, hoard up money, avoid ſtripes, and do theſe and the like things conſtantly and without any diſtemper of mind, they plainly diſcover that they are led by ſome bad diſpoſition of mind, or governed by a deſire of glory, or tickled with a hope of victory in the contention, rather that they doubt really of the truth of ſuch Propoſitions. In the interim, it muſt be obſerved, that the very Indication is fallible and deceitful, where the abſolute nature of the *Indicant* or the *Indicatum* hath not been exactly underſtood before. For in this art of Indications, we do not preſuppoſe only that a Phyſitian ſhould always have learned before, and duly known what all thoſe things are, which we call according to Nature, as alſo in what the Eſſence of a Diſeaſe, and all the parts thereof conſiſt, and to have an exact knowledge of the cauſes of an Affect. Yea, it is neceſſary that he underſtand all Medical actions, and upon occaſion be able to render a ready account what alteration is, what heating, what cooling, &c. what evacuation, purgation, and the ſection of a vein, &c. what conſervation, and the like,

like. For the Indicatian doth not make manifeſt the abſolute nature either of the *Indicant* or the *Indicatum*; but preſuppoſing this is already known, it repreſenteth only a mutual relation; namely, either a ſtrict connexion and conformity which they retain among themſelves; or a diſparity and oppoſition, whereby they may be formed into an undoubted propoſition: but the certainty of the indicated propoſition cannot exceed the certainty of the knowledge of the Indicant. Therefore if at any time we ſcruple the certain knowledge of the Nature of the Indicant, it is not ſafe to truſt to the Indication alone, till it ſhall better be confirmed by ſome other Reaſon or experience. But this doubting muſt not be imputed to the Nature of the Indication, but to the ignorance of the Indicant.

Moreover, it muſt be conſidered that the relation of the Indicant in the Method of practice, doth demonſtrate beſides the evidence ſomwhat of duty in reſpect of the Indicated action, and that the propoſitions formed from the Indication do either explicitly, or at leaſt implicitly inſinuate that duty. As in this Propoſition: a Diſeaſe doth Indicate the ablation of it ſelf, the ablation is decreed and reſolved upon, as a requiſite action on the part of the Indicant, that is a Diſeaſe: as if one ſhould ſay, a Diſeaſe requireth or importuneth the removal of it ſelf. Yet this duty of the action is more frequently and indeed much more elegantly expreſſed by the Participle in *dus*, as a Diſeaſe is to be taken away: which Propoſition in the fulneſs of its ſignification hath a manifeſt co-incidence with the former.

There remaineth ſtill an objection to be anſwered concerning the action of the Indicant; and this it is, *If the* Indication *be the very action of the* Indicant, *how can it be called an operation of the underſtanding? For all wri-*

writers refer the Indication *to ſome generation of the underſtanding.*

We anſwer, The Indication is indeed an action of the Indicant, but yet an objective action, and that it is united to the intellective faculty, and abideth in it as in its ſubject: Moreover, that the underſtanding is a power, both actuated, and as it were informed by its ſubject. Wherefore although the action of Indication be objectively attributed to the Indicant, yet ſubjectively it is aſcribed to the Soul, and eſpecially to the intellective part thereof, which is as it were the act and form of it. And from hence it will be moſt eaſie to reconcile *Galen* with himſelf, who ſometimes defineth Indication to be an *Emphaſis*, ſometimes a *Catalepſis*.

Fourthly, It muſt be examined whether that diſtinction of an Indicated action, into an action helpful and hurtful may tend. For ſome may urge, that *Galen* doth perpetually affirm, that one *Indicatum* only can be inſinuated from one Indicant; and that in his *Method. Med.* he doth affirm, *That they vainly attempt the Method of cure, who are ignorant that one thing is Indicated from one Indicant*, and that all who have written of this matter do ſeem to atteſt the ſame thing.

We anſwer, That *Galen* muſt be underſtood of the three diſtinct kinds of Indicants, which muſt by no means be confounded, nor their Indicates, that is, the things indicated by them. For that which a Diſeaſe doth properly Indicate, muſt not be attributed to the cauſes or the Spirits: In like manner that which the cauſes Indicate muſt not be applyed to the Spirits or the Diſeaſe it ſelf. Finally, that which the Spirits Indicate muſt neither be aſcribed to the Diſeaſe nor the cauſes. For in this reſpect one Indicate anſwereth to one Indicant, and he that obſerves not this, muſt unavoidably confound all things

things, and in the employments of art makes an unsuccessful use of this instrument, according to the judgment of Galen. But it must be considered, that in each of these kinds, the *Indicatum* may be divided into two parts, one whereof is an advantageous action, and to be prosecuted; the other is noxious and to be avoyded: yet each of them belongeth to one and the same kind amongst the aforesaid three, and is as it were a middle part of the whole Indicate: For the Spirits direct to an election of such things as may cherish and protect them, and to an avoidance of such things as may in a further degree empair them: and both these actions concur to advance and ascertain the compleat and final conservation of them. In like manner, both in cure and restauration, and also in caution and prevention, there is found an action as well to be embraced, as abandoned; yet whether of them exceedeth the bounds of its kind, so that no confusion can from thence be feared. For whilst we cure, we make choice of those things that will demolish the Disease, and we deliver the application of such things as will augment it. In like manner, when we preserve, we take away the causes, and withall we shun the use of those things that may conspire either the continuation, or future breeding of them. And for this Reason in the definition which we have presented above of an Indication, we distinguished the action indicated into that which ought to be prosecuted, and that which ought to be waved: which very thing also we were about to do, in the enumeration of the particular Indications to this Disease.

It is now time for us to proceed to the second enquiry propounded at the beginning, namely, Unto which operation of the Intellective faculty the Indication belongeth. We say, first, That the Indication doth in some sort include the simple apprehension of each term, both of

of the Indicant and the Indicate. For he can never underſtand a Propoſition who is ignorant of the Terms thereof. Yet this knowledge is only preparatory and preſuppoſed in the art of Indications, as we have already noted. We affirm ſecondly, That compoſition and diviſion is an explicit operation of the Intellective faculty in the perception of an Indication. For the Indicant by force of his relation doth repreſent the Indicate to be aptly continued together into a relative propoſition. Now that a Propoſition thus conſtituted may in its own nature be ſo manifeſt and evident, that no man can reaſonably doubt of the truth thereof, or need any clearer proof, is expreſly taught by *Galen*——καταλήψει, ἄνευ τηρήσεως ἢ λογισμοῦ; and again in another place ——ἄνευ ἀποδείξεως ϗ παρατηρήσεως. Here ſome calumniate *Galen*, as if he had deviſed an art ſeparated from all experience, and quarrelling with Reaſon; but becauſe *Galen* intended nothing elſe, than that propoſitions framed by Indication are of ſelf credit, and need not any comprobation from Reaſon or Experience, theſe Criticks may perceive their own raſhneſs and retract the ſcandal. *Sennertus* indeed objecteth, that the Indication cannot belong to the ſecond operation of the mind, becauſe the Indicate is neither affirmed nor denied of the Indicant. But that learned man was herein miſtaken. For although peradventure that the Indicate be neither affirmed nor denied of the Indicant directly, and by the bare Verb Subſtantive or Copulative (*eſt.*) Yet indirectly and obliquely it is manifeſtly predicated of the ſame, and after the ſame manner as it uſeth to be in relative propoſitions. As for example, A ſound ſtate is the Indicant of its own conſervation; a ſickly condition is the Indicant of ſome remedy, &c. And if any man will expreſs the Indicate with his relation to the Indi-

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cant by the participle in *dus*, then the Predication will be direct. As a sound State is to be preserved; a diseased State is to be cured, a Disease must be removed, &c. If the Learned *Sennertus* can deny these to be Propositions, he may with the like facility deny that an Indication belongeth to this Operation of the Understanding; but if he must needs confess that, there is no room left for the denial of this. Now we have said that the Indication doth belong to the second Operation of the Mind, because the Understanding, in reference to the order of time, doth withall comprehend the mutual relation between the Indicant and the Indicate, and thereupon frameth a Proposition, which formation and contexture of the Proposition is the very Indication; and explicitly a second Operation of the Understanding. Now that the Understanding doth together at one time comprehend the Indicant and the Indicate in the Indication, is elegantly expressed by *Galen* in a decompounded word which he useth in the definition thereof, *συμπροσπίπτουσα κατάληψις*: also in another definition, *συμπροπίπτει τὸ συμφέρον*.

We say Thirdly, That Indication *may likewise implicitly be referred to the third Operation of the understanding*; Because in the order of Nature the Understanding seemeth first to perceive the evident relation of the Indicant to the Indicate before it can conclude of the certainty of the Proposition from thence resulting. Although in the order of time the Mind (as hath been said) comprehendeth them together; neither is it necessary to form an explicit Syllogism, for the truth is, The Understanding can comprehend those things together at one time, which by the Institution of Nature are termed Successive, as the Sun and Light, Fire and Heat, &c. But in regard that this simultaneous comprehension

of

of an Indication doth include a certain dependance of the knowledge of the Indicate from the perceived relation of the Indicant, it ſuppoſeth alſo that the ſaid relation is ſooner perceived at leaſt in the order of Nature, and that the Indicate is later underſtood and by an implicit bringing in; for a kind of tranſition, in reſpect of the order of Nature, doth ſeem to be here implied from the relation of the Indicant, as the *Medius terminus*, to the Propoſition conſtituted of the Indicant and the Indicate as to the concluſion; and this may be called an implicit reaſoning.

We ſay Fourthly, *That by circumlocution amd circumſtances of ſpeech*, *an* Indication *may be reduced to an explicit reaſoning or ſyllogiſm*, *or rather*, *that the ſame thing which we purſue and argue at by Indication is to be found out and proved by way of Syllogiſm.* For the Reaſon of the evidence of an Indicated Propoſition may explicitly be applied, as the *Medius terminus*, to infer that propoſition. In the Interim a Syllogiſm ſo pieced together will be either abſolutely frivolous and childiſh, or at the beſt only explicatory. As if any one who would prove that a Diſeaſe were to be removed, ſhould thus proceed: *That which is contrary to Nature is to be removed*; *A Diſeaſe is contrary to Nature*, *therefore a Diſeaſe is to be removed.* The *Medius terminus* (*that is againſt Nature*) is not the reaſon of the Relation of a Diſeaſe to the Ablation thereof, but is only an Expoſition of the general Nature of a Diſeaſe. For whoſoever underſtandeth what a diſeaſe is, doth at the ſame inſtant preſently conceive ſomething not natural. And therefore ſuch a ſyllogiſm is only expoſitory. Yet we do not ſuppoſe it to be always unprofitable, becauſe it may ſometimes be ſerviceable to the conviction of a ſtubborn, or the information of an ignorant Diſtemper. Hither alſo we may

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refer the translation of an Indication from the Action to the Instruments by vertue of general Rules: Likes are preserved by their likes, Contraries cured by their contraries.

We say Fifthly, *That a Collation of the Indications among themselves, whereby we may guide our choice by the assent and dissent of the Indicants to what simply and absolutely ought to be done, doth necessarily involve the third Operation of the Understanding.* For the limitation of any Indication supposeth a middle term extraneous to that Indication, which being first understood, the limitation is inferred as a conclusion. For he that findeth out an external for a middle term (thereby to assert the verity of any proposition) doubtless he manifestly argues and disputes. Seeing therefore that besides the Indicant and the Indicate a third term, and the affirmation or negation thereof is required to the limitation of an Indication, evident it is, that the third Operation of the Understanding is requisite to the Invention thereof. Therefore although simple Indications may subministre the first rudiments of Method to Practice, yet to the complement and perfection of disputing, the Art must likewise be joyned with it.

We affirm Sixthly, *That the election of the Physical Matter in particular, and the apt and prudent administration thereof doth not onely imply every Operation of the Understanding, but that it also requireth experience;* for without this, who can sufficiently understand to administer a dose of *Scammony*, or of any other purging Medicament, or know what humors such and such a Plant draweth away by a peculiar propriety? Again, in Medicines alterant there may perhaps lurk some hidden quality, which may be hurtful to the Patient, and this without experience cannot be discerned. We conclude therefore

fore (the proper force and use of Indications being continued) that to a compleat method of Medicine all the dictates of Reason, and the contributions of Experience are pre-required.

We now proceed to the Third Title propounded at first, namely, Into what kinds and differences Indication is distributed. Some differences may easily be observed by what hath already been spoken, which therefore we shall here omit. Now here we distinguish Indication into *general*, *succeeding* and *specifical*. The general is derived from the general Indicant, the succeeding from the intermediate kinds of Indicants, and the specifical from the lowest Species of them. We have already noted, that the general Indicant is the very state of the Body considered in general, as it is frail and in motion; this state indicateth that health must be intended, which is the most general physical action, and the most general Indicate; yet this action is in some sort concrete, and equally includeth two general actions in the abstract, namely, Conservation and Correction. For the general state aforesaid is also concrete, and comprehendeth two like Considerations in the abstract, namely, one of the parts yet qualified according to the prescripe of Nature, which require a pure Conservation: The second of the parts somewhat degenerated from their integrity, which in like manner require a pure correction. These two actions are perpetually conjoyned in every work of Art. For he that conserveth, withall correcteth, that is, he rectifieth some irregularities; and he which correcteth, hath at the same time conservation for the object of his Undertakings. The complication of these actions is so subtile, that it seemeth to have posed that most acute Physitian *Argenterius*, who in this Book *Off. Med.* affirmeth Conservation to be that very Correction, which

which is exercised in the art of maintaining health. But his Error is twofold. First, because he supposeth Correction and Conservation in *Hygieina* to be one and the same action, when indeed they are two distinct actions, however they are complicated in the Exercises of Art. For they are indicated (as we said before) from the several Considerations of the Indicant, and Conservation hath respect to those things which are according to Nature; but Correction reflecteth upon preter-natural sultiness. Moreover, They are perfected by instruments formally distinct, yea opposite: For Correction even in the very art of defending health, is accomplisht by Contraries, but Conservation by Homogeneals; as in this Art we help Emptiness by taking Nourishment, contrary indeed to the Emptiness, but homogeneal to the Parts which are to be nourished. Therefore although these Actions be complicated in the Execution, yet indeed they are formally distinct, and ought distinctly to be entertain'd by the Understanding. The Second Error of *Argenterius* is, because he granteth the correction of Errors only to be the General Action of all Medicines, when as Conservation is equally universal, and alike exercised in all the works of Art.

No man doubteth but we conserve in the *Hygieina* part, and that we correct. Also *Galen* demonstrates in his Book, whether the matters of preserving health belong to a Physician. You will say, That *Galen* in that place doth prove every Medicinal Action to be correction, and that conservation is comprehended under the latitude of correction. But *Galen* must not be so understood, as if he intended correction to be a kind of conservation, seeing that (as we have shewed before) conservation and correction even in this art of preserving health are actions formally different and differently distinguished:

stinguished: for *Galen's* meaning is, that every Medical action when it is actually administred, doth imply and comprehend correction, and in that respect may be called Correction, and so by consequence Correction will be the general Action of all Medicine; yea *Galen* confesseth Conservation to be equally general. For what hinders but there may be two general abstracted Actions in Physick? That doth not destroy, if any man have such conceptions, the unity of the Art, it rather indeed confirms it. For the unity of an Art consisteth in some community, which may be attributed to all the parts thereof; and this union is to be esteemed so much the more firm, as all the parts of art reciprocally conjoyned among themselves by many communities. If therefore there are two general Actions, and those common to all the parts of Medicine, so much the more firmly will those parts conspire the advancement of the Art. Wherefore he contradicts not *Galen*, that affirms conservation also to be a general Action of all Medicine; seeing that the scope of *Galen* was only to shew the unity of the Medical art by the community of that general Action, namely Correction; now he might as easily have shewed it, if the nature of the thing had required it by the community of Conservation. For in the Hygienal part of the most noble circumstance is the Conservation of the whole concrete action, and thereupon the whole action is denominated from the more principal part, and the Art it self an Art conservative. Although otherwise (as hath been said) it also includes Correction. But in the *Prophylactical* part the principal scope of the Medical Action is preservation, namely, the correction of the cause of the imminent Disease: yet this is so performed, and by such means which the present spirits can allow, but in no wise by such things as may

destroy

destroy them. And therefore also in the *Prophylactical* part regard is had to the Spirits, and their conservation is indicated.

Now after the same manner the whole concrete *Action* (although, as hath been said, it also includeth Conservation) is called Preservation and Precaution from the more Noble part. Finally, In the *Therapeutical* part; although in like manner the whole concrete *action* be called *Curation*, and the art it self a *Curative Science* from the principal part of the *action*, yet to speak properly and truly, all this *action* of cure may be divided into three abstracted parts, and evidently distinct; namely, into the Cure of the cause, the Cure of the Disease, and the conservation of the Spirits. For the Vital or Conservative Indication doth evidently, and by the unanimous grant of all Physitians belong also to this part of Medicine, and must be consulted of in every curative *action* before it be undertaken. From whence it is manifest, that this part likewise of Medicine doth perpetually conserve, that is, provide and foresee in every Cure, least the Spirits should receive more detriment than profit from the prescribed remedies. All these things therefore being thorowly weighed, we conclude, That a general Indicate is a certain concrete thing, and may be properly distinguished into two general abstracted *actions* which are exercised in every part of Medicine, and that in the work of art they perpetually make one compleate or complicated *action*.

Moreover, The general Indicant, namely, the State of the body, as frail and in motion may be divided, besides the parts or abstracted considerations already proposed into three kinds, or rather three succeeding kinds equally and alike concrete: namely, into a sound state, a diseased state and neutrality. These three

Species are the ſubjects of the three kinds of Method of Practice; namely, the ſound ſtate of the Hygienal part, the diſeaſed ſtate of the *Therapeutical*, and the *Neutral* of the *Prophylactical* part. Theſe three ſtates are alſo concrete Indicants, and reſpectively Indicate what is particularly to be done, or what the Phyſitians Duty is in all thoſe Arts: namely, a ſound ſtate indicateth the conſervation of health; a diſeaſed ſtate the removal of ſome affect, and the *Neutral* ſtate that the cauſe of an imminent malady ought to be corrected, leaſt it break out into a Diſeaſe. Now theſe three Indicates are alike concrete, and each of them as we have proved above, abſtractively includeth both Conſervation and Correction.

Finally, In a diſeaſed ſtate the action of correcting is diſſolved into two Species; into the correction of the Cauſe, and the correction of the Diſeaſe, and ſo here may be diſcovered three kinds of abſtracted actions. For a diſeaſed ſtate brancheth it ſelf into three Species evidently abſtracted into the Eſſence of a Diſeaſe, the cauſes of a Diſeaſe, and the Spirits or thoſe things which remain in this ſtate according to Nature. For thoſe things which are preter-natural and indicate correction in general, are here ſeparated (as hath been ſaid) into two parts, namely, into the Eſſence of a Diſeaſe, and the Cauſes of a Diſeaſe; and therefore there are three parts of this ſtate, each of which do formally and diſtinctly Indicate. Three kinds therefore (that we may put an end to this matter) of Indications are to be conſidered in this ſtate; namely, from the Eſſence of the Diſeaſe, the Curative; from the Cauſes the Preſervative, and from the Spirits the Vital or Conſervative. To the Cauſes we refer all impediments of cure, as alſo vehement Symptoms, and ſuch as divert the Progreſs of the

the Cure to themselves, for in this respect they are invested with the Nature of Causes. And thus much of Indications in general.

CHAP. XXV.

Indications Curative.

WE have already affirmed, that these Indications are deduced from the Essence of the Disease, we shall therefore in this place slightly run over all the parts of the Essence of this Disease, that the Reader may perceive what every one insinuates to be done.

First, Therefore the Essence of this Disease partly consisteth in a cold and moist distemper, this Disease therefore in respect of this part of its Essence Indicateth, not only that all those things are to be avoided, which are in any wise endued with a faculty to cherish and augment that distemper; but also that the aid of such things ought to be implored, which may subdue the same; namely, hot and dry.

Secondly, This Disease partly also consisteth in the want of inherent Spirits, therefore not only all those things are to be avoided; which can any further scatter and consume the Spirits; but such things must be elected which are vertuous to restore, cherish and multiply them. Strong discussing remedies are therefore in this case to be declined, because withall they consume the Spirits: in like manner such as are extreamly hot, for

they cause them to evaporate and vanish into air; but much more such as have power to dissolve the parts, as violent Catharticks. But the best nourishment must be chosen, and Medicines that are easie of Concoction, as much as may be, and amicable and benign to the Spirits.

Thirdly, The Essence of this Disease consisteth partly in a numbness or astonishment of the Spirits: this numbness insinuates a prohibition and abstinence from all such things as vehemently make thick, and fix the Spirits, or any other wayes stupifie them as narcotical remedies, and many Minerals, which participate of the nature of Lead, as Cerus, Litharge, Sinople or Vermilion, and all such things as have power to excite the Spirits, to expel their stupifaction, and to render them active and agile, are to be made choice of, as exercises, motions, *Frictions*.

Fourthly, The Tone being over soft, loose, flaid and withered, indicateth an avoidance of such things as are wont to mollifie, loosen and weaken the parts; and that such Medicines are to be outwardly applied and inwardly given, as may render them more firm and solid. The same *Tone* as it is internally too brittle, brings a suspicion upon all such things as abound much with an inward slipperiness, and seemeth to desire some roughness, or indeed astriction in those things applied or taken.

Fifthly, The corrupted Vital Constitution on the part of the Generation of the Vital Spirits is not so considerable; but on the part of the distribution of the Vital Spirits, the inequality thereof is of great importance, and indicateth a caution to be had of those things which promote the flux of the blood towards the Head, as also of such things as retard the passage thereof to the first affected

affected parts, but that choice muſt be made of ſuch things as ſtir the Pulſe of the Arteries in the parts firſt affected, and temper thoſe that are in the Head. A ſlow and diminute current of the blood through the firſt affected parts indicateth the ſame things, namely, an evocation of the Pulſe to thoſe parts. But an over facile and ſlippery paſſage of the blood through the habit of the parts, is co-incident in its indication with the ſlipperineſs of the Tone lately recited. A defect of the Vital Conſtitution on the part of the union ſufficiently vigorous and pleaſant between the Vital and the Natural Spirits, indicateth an election of ſuch things as can both nouriſh and cheriſh the Spirits, and alſo excite them to a greater activity, and that their contraries ought to be avoided. The Vital heat, as deficient indicates almoſt the ſame thing as a cold diſtemper, provided that regard be had withall to the ſtrength of the Heart and Arteries, and to the vigor of the Vital Spirits.

Sixthly, The unequal Nutrition Indicateth thoſe things which promove the even and impartial diſtribution of the Aliment and Heat. Or indeed that which is too liberal to the parts that are nouriſhed beyond a due meaſure; the extenuation of the parts requireth a fuller Nouriſhment. The irregular magnitude of the Head, chiefly things extenuant, and ſuch as are of the flux from the Head. The Tumors of the bones indicate the ſame thing; the crookedneſs of the bones require ſuch things as attract the Aliment to the hollow ſide, as moderate rubbings; but things repreſſing chiefly on the gibbous and bunched ſide, as ſtrong bindings. The bending of the Joynts, inſinuateth an Artificial erection of them, as much as is poſſible. The narrowneſs of the breſt pointed Pectorals, and ſuch

things

things as have a faculty to dilate the Breſt; but the ſharpneſs thereof indicateth ſuch things as have a dilative Vertue.

Seventhly, The imperfect diſtribution of Animal Spirits, and ſomewhat defective in the firſt affected part indicateth *Cephalicats*, and ſuch things as facilitate the diſtributions as exerciſes, rubbings, and the like. A defect of due ſtretching in the Nerves, or Nervous and Fibrous parts, indicateth thoſe things as *Corroborate* the Nerves, and ſtrengthen the parts. Thus much of Indications Curative, the Preſervative follow.

CHAP. XXVI.

Indications preſervative.

THeſe Indications are deduced either from the Antecedent, or the preſent cauſes of a Diſeaſe. Thoſe which flow from the former kind of cauſes concern the *Prophylactical* Part: here we only propound thoſe which proceed from cauſes that are preſent and contained in the Body; namely, from common cauſes, or ſuch as are proper to this Diſeaſe.

Now although that common cauſes do not ſeem immediately to attain to the production of the Eſſence of a Diſeaſe; yet even in this reſpect that they are eſteemed an impediment, and may retard the cure, they Indicate their taking away.

Theſe cauſes are either impurities, or excrementitious humors

humors collected and impacted in the first passages, which unless they be taken away, do not only infect the nourishment inward, but they somewhat dull, or otherwise hinder the appropriate Medicines. They indicate therefore an evacuation either by a gentle vomit, or by a lenitive purgation, as occasion shall rather perswade to this or that: or they are common causes deeper imbibed into the Parts of the Body, and these also require an evacuation. But seeing that according to this kind of common causes it is at the same time driven away, and almost with the same Medicaments, as are causes which are proper to this Disease, we shall conjoyn both the kinds of them in this present consideration.

The causes therefore which are proper to this Disease, as also the Common causes which have a deeper penetration into the Body, may be divided into Blood and *Cacochymical* humors. The Blood indeed, although it be rather deficient than redundant in the first Affected parts, yet in the Head for the most part it requires a particular evacuation, which usually is performed by scarrification of the Veins in the hollow of the Ear. Hither likewise we may partly refer blisters raised between the first and second turning Joynt of the Neck, although these perhaps may relate over and above in part to the *Cacochymical* humors.

Cacochymical humors are divided into those which still flow in the chanel of the Veins, and into those which are impacted in certain parts of the Body. The causes or humors flowing in the Veins do (primarily and intentionally) Indicate their evacuation. But if they be unapt for motion (as to the execution) then they require some previous preparation. But because it happens for the most part, that not all the humors are equally unapt, but that some are sufficiently flexible, and others not so,

for but resist the Medicines, in this case they indicate a less evacuation and then a preparation.

Moreover, These humors in the chanel of the Veins may be subdivided into Feaverish (namely, if there be a putrid Feaver) and not Feaverish. The Feaverish humors are either swelling, or not swelling. The swelling, that is, those which are unquiet, or impetuously agitated, do indicate a sudden evacuation, at least a lesser, unless perhaps they are carried of their accord to the external and more ignoble parts, as it happens in the small Pox, the Meazels, and the like Affects. But if a Feaver be present, and that acute, and yet the humors are not swelling, they chiefly indicate that peculiar preparation which they call coction, that by this means they may be obedient to the Medicine to be after given, and than evacuation, but if the Feaver be not acute, but Chronical, although the matter be not irritated, and yet some part of it be sufficiently flexible; in this case, a lesser evacuation is first indicated at any time of the Disease, and afterwards the coction of the relicts, that they also in their time may be evacuated.

The humors contained in the Veins which are not Feaverish, if they are fluxible, they first indicate evacuation: but because in this Affect slow, gross and clammy humors are almost perpetually present, preparation (at least where a lesser evacuation hath gone before) is first Indicated; and indeed the viscous humors Indicate incident, and the thick attenuant remedies. Again, when the Disease is very Chronical, and extended to many moneths; yea, perhaps to a year and upwards, it is not to be supposed that the whole matter causing the Disease can at once be prepared or evacuated; wherefore in this respect it Indicated, that we insist upon things preparatory and evacuant by turns. Besides we must know, that

Cholerick

Cholerick humors require one preparation and evacuation, and Melancholy humors another, flegm another, and watery humors another. And that the preparation and purgation is Indicated variously according to the diversity of the humors commixed with the blood.

The humors that are impacted in certain parts of the body, do much more require preparation before they are evacuated; according to that of *Hypocrates, When you would purge a Body, you must first make it fluxible.* Neither doth a certain general purgation suffice to subdue these humors, but such a preparation is required, that hath a peculiar reference to that part in which they are inhærent, and therefore the humors in the Liver require one kind of preparation, those in the Lungs another, &c.

Finally, Seeing that the propounded kinds of all humors after they are evacuated, may grow and breed again; they Indicate an avoiding of such things which may dispose the body to an easie generation of such humors: And thus much of Indications. Preservative, it remaineth now that we consider the Vital and Conservative.

CHAP.

CHAP. XXVII.

Indications Conservative or *Vital.*

THis Indication ariseth *from those things which are according to Nature.* For *Life* in it self consisteth in these things; namely, *in a triple Constitution of the Body, the Natural, Vital and Animal above rehearsed.*

The Natural comprehendeth under it.
First, *The Temperament.*
Secondly, *The Inherent Spirits with their plenty and vigor.*
Thirdly, *The Tone of the Parts.*
Fourthly, *The Structure of the Organs.*
Fifthly, *The Continuity.*

The Vital containeth
First, *The Generation* } of { *the Vital Spirits.*
Secondly, *The Distribution* }
Thirdly, *Their participation with those parts unto which they are distributed*; namely, *from the union of them with the said parts, and the communicated heat.*

The Animal comprehendeth
First, *The Generation* } of the { *Animal Spirits.*
Secondly, *The distribution* }

Thirdly,

Thirdly, *The due Stretching of the Parts depending on the Influx of the Brain.*

All these things because life consisteth in them, are called *Vital Indications.* But among Authors for the most part they are known by the common name of the Spirits, but this name is somewhat too gross, seeing that in propriety of speech, the Spirits are radicated in the said Constitutions, and are faculties of them. Yet we have no design to innovate the custom of speech, provided that the things may be understood as it is.

These Indicants so long as they continue firm and sound, they require only a general and ordinary conservation by the right use of the six non-Natural things; but when they are all alike vitiated or obnoxious to imminent hurt, they require not only a general conservation, but such an one likewise as is mixt with cure and preservation. Again, Where some one Constitution, or some one part thereof is depraved more than the rest, or subject to such depravation, besides the general preservation, it requireth in like manner an especial one to be associated to the peculiar Curation. Lastly, When a Constitution subject to error, or actually erroneous is fixed to some certain part, so doth higher specify that conservation; namely, that respect may be also had of the part so labouring more than the rest.

But because some say, That the Vital Indication is the only, and that Conservation is the simple end, and that they cannot be further subdivided, because that all things which are according to Nature are comprehended in the word Spirits, and that they Indicate one Action; namely, the preservation of themselves. We grant indeed that the Spirits, if (as we have already noted) they be improperly taken for their causes; namely, the three

three Constitutions aforesaid, may in one word comprehend all things which are according to Nature, but then this word must be *Generical*, and divisible into three species; namely, the three Constitutions, as Spirit, Natural, Vital and Animal. We grant also, that the end, or that the Indicated action is one; namely, Conservation, but by the unity of the *Genus*, not of the ultimate species. For those very things which are according to Nature, however they agree in the *Genus*, yet in the species they may differ among themselves, and require a different conservation; yea, it is possible that those things which conserve the Spirits on one part may impugn them on the other; as for Example, Wine given may in one respect cherish and strengthen the Vital Spirits, or rather the Vital Constitution, but in the interim it may offend and debilitate the Animal Spirits, or the Animal Constitution. In like manner, the Temperament requireth one preservation, the Structure of the Organ another, and the Continuity another. Yea, the very different Constitution of the parts Indicates a various conservation, neither do we after one and the same manner, or by the same actions provide for the special conservation of the Liver, Lungs, Brain, &c. Wherefore when some one Constitution is more infirm than another, or when some one part is weaker than another, it Indicates a proper conservation peculiar and special to it self, and therefore both Conservation and Conservants may be divided into their Species. For the Conservation and the Conservants appropriated to the Animal constitution, differ from those which are destinated to the Vital or Natural: And from hence the three first kinds of Conservation are to be deducted, namely, the Conservation of the Animal, the Vital and the Natural Constitution. In like manner, the Conservation of the Li-

ver

ge is accomplished by the use of the Hepaticals, and of the Lungs by *Pectorals, &c.* Yea, all parts of an eminent diversity do subdivide the conservation into so many more species. Thus much of the division of Conservation into its species.

Moreover, The same Conservation seemeth to be further divisible unto its parts. For this Conservation is somewhat complicated, and doth not only relate to simples, but in some sort to contraries, to wit, Indicates both Curative and Preservative, and either permitteth or disalloweth those same things being estimated with the Spirit. It seemeth therefore to be branched into three parts; into an election of like matters, into an election of contraries under a certain condition; and into a prohibition of the same under a diverse condition.

The election of like things is the most appropriated *Action* of Conservation, and seems withall to have reference to two kinds of things alike; namely, such as are easily assimilated, and are properly nourishments, and such which although they cannot be assimilated in respect of their substance, yet they contain within the same qualities like unto the constitution of certain parts, in respect whereof they are reputed amicable and familiar to Nature, and do cherish and strengthen certain parts.

You will say, *Those are indeed Alterants, and do belong to the kind of contraries.*

We answer, That in a diverse respect they may be referred to each kind, but in as much as they obtain qualities like unto the due Nature of the parts, although otherwise they alter some small matter, yet they are to be referred to the similaries. For the very nourishments do in some degree alter, and are directly contrary to emptiness, and conservation it self doth implicitely include a

certain correction, as we have shewed above. Now these indeed in regard of a middle nature, which they have between similaries and Alterants, are not called Medicaments, but Strengthners, Conservants and Cordials. Again, these are Indicated as Conservants by the peculiar debility of the Spirits, and as to be elected, and not only permitted, and so they are esteemed in the Books of Practical Authors.

This Permission of a remedy somewhat contrary to Nature, doth likewise belong to this Indication. For such is the dignity and value of this Indication, as it summons both the Curative and Preservative Indicates to an examination before they are reduced into practice, and doth not only moderate and limit the quality and quantity of the remedy, but also the very time of repeating it, yea, whatsoever appertaineth to the use thereof, or the manner of using it, and all this least in any wise it should exceed the Spirits of the Patient, or be injurious to them: nor is the excellency of it thus circumscribed, but it requireth more; namely, that more profit and advantage may accrue to the things, according to Nature by impurgation of the Disease, then hurt or detriment by any violence offered to Nature. And under this Law and Condition Vital Indication permitteth many things to be done, which of themselves are contrary to the Spirits, yet always in favour of health, never to the prejudice of Life.

A prohibition of a contrary is altogether a commanding *Action* of this Indication, and by a kind of Authority *dictates* this or that thing not to be done, (although it were otherwise Indicated) because perhaps it endangers life it self, or brings more disadvantage than benefit of health to the parts. And this is the third and last force and use of this Indication. We shall

now

now in hand to apply these things to the present Disease.

All Constitutions in this *Affect* are very weak and infirm; and this is manifest from the bare consideration of the tender age. But the Natural doth yet further suffer by the force of the first Violence of the Disease; and from hence also the Mind is somewhat weakned; and indeed neither doth the Animal escape wholly free, as was shewed above. Wherefore both a general and also a particular regard must be had to these Constitutions, as well in the *Election of Similaries*, as in the permission or prohibition of contraries.

First, Therefore in this *Affect* you must make choice of the best nourishments, such as are easily of *concoction*, and as near as you can agreeable to the custome and age of the Patient, to the time of the year, &c. the contraries must be avoided, namely, such things as nourish little, are difficult of digestion, and incongruous to the custome, age and season.

Secondly, Those things must be chosen which cherish and strengthen the weaker Constitutions, and the parts that are most affected, and these must be either exhibited severally, or they must be mingled with nourishments or Medicines; but such things as are neither serviceable to this scope, nor otherwise indicated, must be totally avoided.

Thirdly, Benign and gentle evacuants, or otherwise sufficiently *corrected*, must be allowed in a moderate quantity, just and due interval of time being observed. But the contrary things; namely, violent and fierce Purgers, especially such as are apt to dissolve the parts, or are exhibited in an undue quantity, or too often repeated, are forbidden.

Fourthly, Remedies alterant, or such as prepare the humors, or *correct* the Disease, must be permitted; such also as are friendly and familiar to Nature; for such as may be made such by good company, that is, by composition or sufficient *correction*. Remedies violently alterant, extream hot, and vehemently discutient, or any other which in any wise resolve and dissipate the parts.

CHAP. XXVIII.

The use and right administrations of the Indications *aforesaid.*

HAving propounded the three kinds of simple Indications, and deduced them into their lowest Species; we shall in the next place consider the *right use and administration* of them. The exact knowledge whereof seems impossible to be obtained without rode and experience. For it descendeth unto Individuals, and comprehends not only the *Election* of a thing among so many Indicates simply to be done in the Species, but also *the invention of quantity, place, form, time, order and matter of the remedy to be exhibited.*

The *Consent* and *Dissent* of Indications do contribute much to this invention. Now the *Consent* may be twofold: of *Co-indication* and *Permission*. *Permission* may be either an *Advantage* or a *Loss* to him that permitteth

or neither of them. A *Permission* that cannot be granted *without hurt*, must never be allowed without the greatest circumspection, and so much the greater, as the damage may be the more to him that permitteth. For although the Permittent may part with somewhat of his private right to advance the publick good, yet in respect that he is a member of the whole, he is supposed to be a gainer.

The *Dissent of Indicants* is twofold; namely, either *Contradictory* or *Contrary*. The *Contradictory* among the Books is called *Interdiction* or *Prohibition*, and for the most part it is appropriated to the Spirits, unto which in this respect we must alwayes yield obedience. The *Contrary* is called *Contra-indication*, and this doth not simply forbid, but so far forth as it undergoeth the Nature of an impediment, or some more urgent Indicate.

First, *where* Indicants *consent either by* Co-indication *or* Permission, *satisfaction if it be feasible, must be given to all the* Indicates. *But if this cannot be performed, Medicines of that Nature are to be preferred before the rest, which are correspondent to most, or at least to the most urgent Scopes. But if such simples cannot be found out, then you must institute an apt composition of diverse simples one with another.*

The Essential parts of this Disease, although they are very various, yet is there not any considerable disagreement among them, and nothing hindreth but in a great part they may be considered together. For Medicines temperately hot and dry, may at once cherish the Inherent Spirits, and perhaps conduce to the scattring of the numbness in them, and withal somewhat fortify the *Tone* of the parts, and facilitate the equal distribution of the Blood, and consequently the equality of the Nutrition; also it may increase vigor in the Vital and Animal Spi-

rits, propriate the Arteries in the first *affected* parts, and strengthen the Nerves; unto which Heads almost all the Indicates of the Essence of a Disease may not unaptly be referred. Moreover, the Spirits also, although they prohibit all extream hot things, yet they allow of these as moderate, and very congruous to Nature. In like manner there is little or no particular repugnance between these causes and the Indicates, albeit in respect of time and the order of administration, some dissent may be observed, as we shall see afterwards in due place.

Wherefore in what respect, and how far these agree together whilst we intend a cure, we do at once respect not only the Spirits, but in some sort the causes, by choosing such curative remedies, or by mingling such ingredients with them, which are able both to attenuate the thick matter, to cut into the viscous, to open the obstructed passages, and the like. In like manner, whilst we are chiefly imployed either in preservation or at the rooting out of causes, we make choice of such evacuants, or else we compound them with such remedies, as are also partly contrary to the Disease. And all these things we do to that purpose, as that (as hath been said) we may be subservient to the most intentions we can.

Now having found out the *actions* simply requisite in the Species, in the next place we shall enquire out their *due circumstances*.

1. In regard that this is a great Disease, it requireth a *great quantity of the Remedy*, in respect of it self. For a *Remedy* unequal to the Disease cannot extirpate it. It is necessary therefore, that the dose of the Medicine be equal to magnitude of the *Affect*. But in this Disease the Spirits permit not so great a quantity of *Remedies* to be given at once. Wherefore that quantity must be divided and given by turns. [illegible] is a Chronical Disease, and of

low a diet, neither doth it necessarily require an hasty Cure, and although the Spirits cannot well endure either vehement Remedies, or such as are given in a large dose, yet they permit the use of Evacuant Medicines by an Antidote. Wherefore by turns, we must sometimes make use of Remedies Preparatory, sometimes Evacuant, sometimes Alterant, and sometimes Strengthning.

Secondly, For so much as belongeth to the *place of a cure*, the general Rule is, that the remedy ought to arrive at the seat, and penetrate to the very Cause of the Disease. If therefore it must have a passage into the Vessels, it must be taken at the Mouth; but if it will suffice to touch only the thick Guts, it must be injected by the Fundament. If the humors be naturally ready to move upward, expel them by vomit; if downwards, expulse them by stool. In like manner you must humor the Inclination of Nature, and root out the causes by spitting, by Urine, or by Sweating. Particular evacuations must be instituted in the very affected parts, or in the parts adjacent. For so the force of the Remedy doth the more surely make way to the seat of the Disease and the morbifical Cause. And for the same reason external and topical Medicines must be applied to the next convenient place. Yet you must know, that there is a certain Sympathy between some parts, in which case the remedies are frequently administred to the part, wherewith that content intercedeth, and neither to the affected nor the adjacent part.

Thirdly, *The form of the Medicament* doth partly depend upon the Rule last propounded. For if the scope be to temper the Jaws or the Windpipe, we chuse a licking or lapping form, that by degrees the remedy may slide over the affected parts, and stay the longer upon them. In like manner, if the Stomach be affected, we

often prescribe Pils, Powders or Electuaries, that they may the longer abide in the Stomach. To the Kidneys we rather design liquid things, that they may the more easily be carried down to them with the watryish part of the Blood. The forms do also in some part depend upon the very nature of the Disease, as in burning Fevers, liquid things are for the most part convenient, dry things are scarce admitted; on the other side, in moist Diseases, and when the Belly is over-soluble, more solid forms are preferred. Finally, the forms of the Medicines do also partly depend upon the nature of the Ingredients. So Gallia worketh most effectually in the form of a Bolus, Hartshorn, Coral, and the like in the form of a Powder; in like manner bitter things, such as begets a vomiting, and stinking things are concealed in the form of Pills; sometimes also they are guilded, or else they are enwrapped in Wafer, and exhibited in the forms of a Bolus.

Now it must here be noted, that for the most part the form of the Remedy is not so considerable, as it gives place to the more easie and commodious administration, in respect of the Admission or Reception of the Sick. For many cannot swallow Pills, others presently reject their Potions by vomit, and others are perhaps averse from other forms. In this Affect, in regard that all Children almost are loth to take Physick, that form is to be preferred before the rest, which shall be observed to be least distastful to them.

Fourthly, As for *the time of action*, you must endeavor to fit your administrations, that they may as little as possible be interrupted with times of eating, exercise or sleep; for at this age the Spirits are scarce preserved found and perfect, without an interposition of those things by just intervals.

Remedies

Remedies evacuant, opening, attenuate and incident must be taken early in the morning upon an empty stomach, and if they must be repeated the same day, four of the Clock in the afternoon (upon an empty stomach likewise) is the most seasonable hour. Strengthning and astringent Medicines, and such as provoke sleep, are to be taken rather in the evening than in the morning; but perhaps some of these are most agreeable after meals.

Medicines that are mingled with the nourishment, ought to be grateful to the Palate, lest they subvert the stomach, and hinder concoction, or cause a loathing of the meat, or else empair the Spirits.

As for the order of proceeding, there occur two general Rules. The former is, That that must first be done, which being premised, makes way for the following Remedies, and therefore that ought first to be removed which hath the consideration of an impediment in respect of what must follow. The later is, That we must ever give our first help to the more urgent and weighty Indicant, unless some impediment intervene.

If the Question therefore be, *Whether the Disease, or the Cause of the Disease doth first require the help of Physick?* The answer will be obvious according to the first Rule: For the causes are reflected upon under the notion of an impediment in respect of the Cure of the Disease; for they cherish it, and infringe the vertue of the Medicines. Wherefore, before that we are intent upon the vanquishing of the Disease, we premise all possible endeavors to root out the Cause, or at least to lessen, abate and retund it, that it may oppose no considerable force to retard the rooting out of the Disease. Yet in the interim, whilst we are busie in the removal of the Causes, the Essence of the Disease must not be totally neglected, as we have before admonished. Yea, when we have so subdued the Cause

that

that it cannot for the present much interrupt the Cure, we may (the Causes not being utterly overcome and cast out) the more diligently and earnestly attempt the resisting of the effect; yet with this condition, That if the Causes revert and become new impediments, that then we are obliged presently to undertake the subduing and evacuation of them; so that in this Chronical Affect, sometimes the Causes, sometimes the Disease must be resisted by turns; and the Spirits do better undergo this change of action, than if we should continually make our battery against the Causes, till they were absolutely rooted out.

Moreover, When the Causes of the Disease in this Affect are unapt for motion by reason of their toughness, grossness, and perhaps seclednes; they must first be freed from this impediment and prepared before they are evacuated. For according to the Rule of the great Dictator, *Quæ movenda sunt, fluida prius facere oportet.* In like manner, that thickness, toughness and seclednes of matter, if it be present, indicate Remedies attenuant, incident and opening. But these things are not safely taken, the impurities still flowing back into the first Passages, for then perhaps they are carried along with the Medicines into the Veins, and more desire the Blood, or at least hinder the efficacy of the Remedies. These therefore have the nature of an impediment, and must be in the first place removed.

Lastly, Universal Evacuants must be premised before Particular and Topical Remedies, especially where it is not permitted at once to mind both intentions. For the Universal Causes flowing in the Body, are easily surrogated in the room of Particular Evacuations, and renew the Affluxes to the first affected part; but the thinner part of Particular Causes, and that which is most apt for

motion

motion is evacuated, but the thicker perhaps is more impacted. Wherefore Universal Causes yet flowing to and [illegible] in the Body, as considered are Impedim[illegible] [illegible] Evacuation, and by consequence must be first expelled.

The later Rule was, *That we must relieve the more urgent and weighty Indicant first, unless there be an interruption of some impediment.* That is termed an urgent Indicant which threatneth the most danger. Now every such Indicant is supposed to induce great afflictions into the Body, and not without manifest danger to wast the Spirits. Therefore in this respect we must sometimes first help the Disease, the Cause being neglected. Sometimes also we must neglect both the Disease and the Causes, and address our endeavors to the pacification of the Symptoms, as in a vehement Flux of the Belly, long Watchings, profuse and immoderate Sweating, and the like. But even in these cases, we must have a prudent regard both to the Disease and the Causes, and when the urgent Symptom is corrected, or the violence of the Disease repressed, then we must return to the regular Method of proceeding; for this Rule belongs not to the ordinary and legitimate order of Cure, but to the Method of Necessity.

Moreover, to perfect the right administration of Indications, there is required an exact and accurate knowledge of the *Medical Matter* whereof we shall discourse in the subsequent Chapters.

CHAP.

CHAP. XXIX.

The Medical Matter answering to the Indications proposed, and first the Chirurgical.

THE *Medical Matter* must be found out by Experiences and *Analogisme*, or arguments drawn by an inevitable necessity from the Cause to the Effect; although the truth is, we conceive not any other Reasonings to be absolutely excluded. It is vulgarly and not unaptly distributed into three kinds, The *Chirurgical*, the *Pharmaceutical*, and the *Dietetical*. Of these in their order.

The *Chirurgical* commonly received and approved in this Affect, and famous above the rest, are chiefly two, *Scarrification of the Ears*, and *little Fountains* or *Issues*. But our enquiry (as we shall see anon) shall be extended to many more, namely of Cupping-Glasses, Leeches, Blisters, Ligatures and Swathing-bands: But the opening of a Vein the Spirits cannot brook, as every one knows, who but observes the frailty of the age, the extenuation of the habit of the parts, and the smallness of the Veins.

The *Scarrification of the Ears* shall lead our discourse. The *Empericks* who undertake the cure of this Disease, make more of it than one would imagine. For in their practice they celebrate it with great vaporing, and without it scarce hope for a happy cure. But we, although we disallow

disallow not this kind of remedy, have seen many Children successfully recovered without the use thereof. And they themselves who attribute most unto it, for the most part take away no considerable portion of Blood. Yet some affirm, that they have seen a large quantity of Blood drawn away with good event. However it be, it is credible, that those Children do with most ease endure this remedy, and obtain most profit by the use of it, which are of a Sanguine complexion, and well habited, and who are affected with an *Alogotrophy*, rather than an *Atrophy* or a Consumption, or any other remarkable extenuation of the parts. Our Practitioners for most part repeat this operation two or three times in a week. They seldom do it with an Instrument or sharp Pen-knife, but most commonly with an ordinary blunt Knife, taking no notice of the pain and crying of the Child. Moreover, For the most part they perform it in the hollow of the Ear, but some extend it to the inward and outward circumference of the upper part of the Ear, yea to the whole circumference. No man hitherto as we know have attempted the Scarrification of the hinder side of the Ear, although indeed it is not easie to give a reason, why it should conduce less being administred there than in the hollow part.

Yet it may be lawful for us to offer our conjectures why the hollow of the Ear should be chosen before the other parts for this operation; which notwithstanding we will not confidently assert, although we suppose we can at least probably assert, if that be true which the most diligent Chyrurgion *Fabricius Hildanus* hath written in his *Observ. 4. Centur. 1. de nervo quinto paris*. For this conjecture is grounded upon this Observation, and if that be ruinous, this perhaps must perish with it. The Conjecture is this, *The distribution and use of the*

Nerve

Nerve, and of the fifth Pair before mentioned, being supposed, Scarification in the hollow of the Ear may very conveniently both free that Nerve from any kind of oppression, and likewise shake off the numbness, and give it vigor. For the hollow of the Ear is the next place unto which we can come at with an Instrument. Wherefore evacuation being here made, may immediately drive away the matter which commonly oppresseth the very beginning of that Nerve, and withall causing pain and encreasing the heat, and may drive out all stupidness from within it, and add vigor unto it. This Nerve therefore (as that famous Chyrurgion affirmeth) or a part thereof be distributed unto the Marrow of the Back, and never forsakes the Marrow of the Back, but shooteth out little Branches with the Nerves of the Marrow of the Back to the ends of the very Legs and Feet; it may easily be granted, that this Nerve thus delivered from obstruction, thus excited and having gotten vigor, may likewise in some manner excite the Marrow of the Back it self, and all the Nerves from thence arising; which by that opinion it doth accompany to the very end of the Body, and imprint some vigor in them. Wherefore Scarification being made in that place, must needs be of greater efficacy, than if it were instituted in any other part of the same Ear, more remote from the aforesaid Nerve. The same may almost be said concerning the little wound here made by a blunt Knife. For some Practical Physitians affirm, that the excellency of this operation relates not so much to the quantity of the Blood to be drawn, as to the stirring up of pain in that part; which any man may easily reduce to the stirring up of the vigor of the Nerve of the fifth Pair.

But omitting this Conjecture we will propound some other Considerations, in respect whereof this Scarifica-

tion

tion may be useful in this affect. First, By this means we obtain a certain particular evacuation of the Head, which part, of any other is in this Affect oppressed with particular fulness. Secondly, By this very evacuation of the Blood, we somewhat correct the thinness and sharpness thereof, and by consequence we promove the more equal distribution of it, and a more regular and equal Nourishment of the Parts. Thirdly, By this means we in some sort drive away the astonishment of the parts.

It must be noted, that this operation when it performeth a particular and local evacuation, doth not simply deserve the first place in the Method of Cure, but must follow in its order, Universals being premised.

Lastly, It seems to be ridiculous and superstitious which some are busie about when they administer this Scarrification; whilst they fasten the Blood of the right Ear sucked up into Wooll to the left *Hypochondry*, and the Blood of the left to the right. This much of Scarrification.

Issues in this Disease are much approved, and we have known some Children cured only by the help of this means. For it doth not only perform all those things which even now we ascribed to the Scarrification of the Ears; but more particularly it is a powerful remedy against the *Hydrocephalus*, both Curative and Preservative, and very much conduceth to lessen the unusual magnitude of the Head, and to evacuate the superfluous watrineſs thereof. And lastly, to represse the inordinate encrease of the Bones. Also it manifestly driveth up the too much humidity of the Spinal Marrow, exciteth heat, strengthens the Nerves, and expelleth the astonishment.

Now because this kind of remedy is properly a little

Ulcer;

Ulcer, and causeth some small pain to the Child that hath it, and bringeth daily some trouble to the Nurse, it ought not to be prescribed, unless the greatness of the Disease be such that we despair to conquer it by other remedies without the concurrence of this.

This little Fountain must be made between the Second and Third turning Joynt of the Neck. Some burn it with a actual Cauterising, but we disapprove of this way in regard of the vehemency of the pain: Some effect it with a potential Cauterising: but neither do we like this, because all Caustick is are adverse to the Nature of an Infant, insinuating some venemous quality, and also doth too much dissipate the Spirits, and weaken the part. Therefore we allow rather of an Issue made by Simple incision with a sharp Pen-knife.

Some make use of Iron-Tongs contrived for this purpose, wherewith they take hold of the Skin, the place of incision being first mark'd with Ink, and by a moderate compression they dull the sense of the part, and then they thrust in the Pen-knife through the middle of the tongs, which is pierced with a longish hole, and so they make the incision. Having made the wound, they stop in either an Artificial or a Natural Pease, putting upon it a digestive Plaister: upon this they wrap a Paper of a linnen cloth divers times doubled, and fasten to it as it were a Buckler made of some solid matter, unto which four swathing-bands are sewed; thus much of Issues. In the next place we shall examine some other kind of Chyrurgical Operations.

And first Leeches offer themselves. Truly we have not yet sufficiently tryed how beneficial the application of them may be in this Affect. But if we consult Reason, we suppose that more hurt than advantage may be expected from this remedy. For if they are applied to

any

any part of the Head, by reaſon of their continual ſucking they would eaſily cauſe a more violent afflux of the Blood to thoſe parts. And if they be applied to other parts, they draw the Blood from the parts which before had too little.

Secondly, Cupping-Glaſſes are not (we conceive) ſo dangerous as needleſs; indeed we altogether reject thoſe that are miniſtred with Scarrification, not only for the Reaſons juſt now deduced from the Leeches, but being moved both by fear of dejecting the Spirits by reaſon of the pain, and alſo in regard of the troubleſomeneſs of the adminiſtration. Cupping-Glaſſes without Scarrification, as we began to ſay, ſeem not refuſable either by the Spirits, or the Diſeaſe, or the cauſes of the Diſeaſe. But theſe are very little effectual, and we leave it to be perpended, whether the profit ariſing from the uſe of them, whatſoever it be, can recompence the trouble of the application.

Nevertheleſs it may happen by reaſon of the complication of ſome other Diſeaſe, that the uſe of them may be of ſome moment, as in a Pleuriſie, a Phrenſie, and where ſome dangerous Flux is imminent againſt ſome principal part; in which caſe thoſe perhaps that are adhibited with Scarrification, may be admitted in great and ſtrong Children. But then you muſt apply them to the turning Joynts of the Neck, the Shoulders, the Hanches, to the inner parts of the Thighs, to the ſoles of the Feet, and to other places as the peculiar complicated affect ſhall require.

In the mean time it muſt be noted, that in an age ſo tender, you muſt make uſe of very ſmall *Cupping-Glaſſe*, and that they muſt be applyed with a leſs flame then they are wont to be in others of mans eſtate, and that the ſcarrification, if at all it be admitted, muſt be done with a gentle hand.

Thirdly, As for Blisters, although hitherto we have not had sufficient tryal of them, and although we banish from this Disease both septical applications, because they dissolve the part, and also caustical, because they penetrate deeper, and produce a caustical substance; yet we conjecture that those *Pyrotical* remedies which only raise Blisters in the Skin, may be sometimes profitably admitted.

You will say, that Cantharides wherewith they are commonly made are extream hot, and besides suspected to be of a venemous quality.

We answer, That we may not here insert any thing of the qualities of Cantharides, we grant that which is asserted. But because they are administred only to the outward little Skin, and only to a little part thereof not much extended, and because as soon as the blisters are raised, they are removed, the excess of their heat and their Poyson scarce penetrates deeper into the Body, than the bottom of the *Epidermis*, and therefore this remedy may be applyed without any notable harm or danger. But then you may demand what profit can arise from hence? We affirm, that it doth effectually correct a cold and moist distemper, and potently dissipate the astonishment of the Marrow of the Back, the Brain, Nerves, and the Nervous parts, and withal that they make all the parts more firm and steady, and stir up a stronger Pulse in the external parts; all which things are of no small moment in the cure of this Disease.

One amongst us affirmeth, that among other things he prescribed this remedy to a Child of two years old who was troubled with the *Rachites*, and was also fallen into a continual and malignant Feaver, and grown almost frantick. Hereupon the Child found present and manifest ease, and after a few days was delivered from his

Feaver

Feaver. Afterwards having purged him twice or thrice with an infusion of *Rhubarb*, *&c.* Beyond the expectation of all that saw it, he also subdued this *Affect* almost without any other remedies. But as you can scarce find any commodity without a discommodity; so neither is this remedy exempted from all inconveniences. For it is unpleasing, full of pain and molestation to Children: Moreover, for a time it interrupteth their exercise and pastime, in respect of which things, unless perhaps some other complicated *affect* do point at an interdiction of exercise, it may do much more prejudice than advantage. Again, the force of it suddenly wasteth, and afterwards by degrees is consumed, which doth not in all respects keep touch with a Chronical Disease. Finally, an Issue which is proper to Chronical Diseases, may very well supply its place in this *affect*. Wherefore we scarce admit the application of blisters in the cure of this malady, unless some acute Disease be accomplicated, which may require this kind of Remedy, as it falls out in the Cause propounded.

Now where this administration is requisite, it is most commodiously performed upon the turning Joynts of the Neck, unless some Issue have prepossessed the place; in which case you must administer them either behind the Ears, or four Fingers below the Issue. We deny not but it may be fitted to several other places in respect of the complication of other Diseases. But we here design the place with a peculiar reference to the present Disease.

Fourthly, Ligatures also may be referred to this Title, and indeed we grant, that sometimes they are not altogether unuseful in this *affect*; namely, if they be very moderate, and adhibited by just distances, and unto convenient places; but you must beware that they hinder not the growth of that part, whereunto they are ap-

plyed; which is done if they be sufficiently loose, and made of soft wooll, if in the Day-time, or for some part of the Day they are tyed up, and unbound at night, if they be fitted to the Thighs and Legs upon the Knee, and to the Arms upon the Elbow.

Yet Ligatures do here seem to conduce much to the stoppage of the Blood from flowing to the Head, and that it ought to be fastned to the outward parts that are extenuated: besides, this Remedy is good to retard the over slippery return of the Blood in those parts, unto which the Ligature is applyed.

Fifthly, Hitherto also belong the *Fasciation* or swathing of certain parts, for this hath an affinity with Ligatures. For some use to enwrap the weak parts in woollen blankets, thereby to strengthen them, and to cherish their heat; namely, the Feet, the Legs, the Knees, and the adjacent parts of the Thighs. But you must be careful that the overstraightness of them hinder not their growth.

Others, instead of these swathing-bands use buttond Boots lined with woollen Cloth; these they do not make use of only for strength and heat, but also to correct the crookedness of the Bones, and to erect the bending of the Joynts. Some add little *Shingles*, or *pieces of whalebone*, but there are three things worthy of observation in the making of these. 1. That they may somewhat crush the prominent and convex part of the Bone. 2. That they scarce touch the hollow, but rather that they defend it from compression. 3. That they be well fitted to the part, and do as little as possible hinder the motion of

the

Take the tops of *Groundſel* half an handful, *Raiſins* one ounce; boyl them in a pound of *Ale* to the conſumption of one half. To three ounces of *Colature*, add half an ounce of *Syr. Acetoſ. ſimpl.* Mingle them, and drink them luke-warm.

Or,

Take the Infuſion of Crocus-metallorum in Spaniſh wine, made in a cold place and well purified by ſubſidence one dram, a dram and an half, or two drams (according to the age and ſtrength of the Sick) *half a dram of Syr. Acetoſ. ſimp. Poſſet-drink an ounce and an half, Cinnamon water ten drops*: or inſtead thereof, if there be any fear of Convulſions, *one ſcruple of Aq. Antepilept. Lang.* Mingle them, and drink it warm.

Take the Juyce of the Leaves of Aſarabacca half a dram, two ſcruples or a dram, Syrup. Acetoſ. ſimp. two drams. Mingle them with a ſufficient quantity of *Poſſet-drink.*

Take Salt of Vitriol from five to ten grains, Give it in Poſſet-drink.

Lenitive Cathartick.

Theſe Evacuant Medicines produce their Effects without tumult, and therefore they require not ſo great circumſpection, as Vomiting Compoſitions, or ſuch as are effectively Purgant. Yet three things muſt be conſidered in the Uſe of them. 1. That they do not nauſeate the Ventricle with ſuch an ingrateful taſt and ſavor as may render an abhorrence from all future Medicaments. 2. That they oppreſſe not the Stomach by an immoderate quantity. 3. That the potion drunk be not preſently vomited up. To prevent this laſt danger, it will be a good way preſently to bedew and moiſten the

Mouth

Mouth with ſome pleaſant and agreeable Liquor, or with candied Cherries, or preſerv'd Barberries; or to temper the juyce of Oranges, or the like.

Theſe Lenitives may be divided into *Simple* and *Compound*: and theſe again into ſuch *as are ſold in the Shops*, and ſuch *as are newly made and accommodated to the preſent ſcope of the Phyſitian.*

There are found very few Simples, that of themſelves will ſatisfie this *ſcope*; as *Manna*, *Caſſia fiſtula*, *Aloe ſoccatrina*, *Tamarinds*, *Polypodium of the Oak*. But very ineffectually, unleſs they be compounded with other Purgative Ingredients, of which more follow, as *Jujubes*, *Sebeſtens*, *ſweet Prunes and Dameſcens*, *Figs*, *Dates*, *the Pap or Pulp of roſted Apples*, *the Flowers of Mallows*, *Violets*, *Pellitory of the Wall*, *Mercury*, *the Roots of Marſhmallows*, *Liquoris*, *the four greater cold Seeds*, *the Seeds of Mallows*, *ſweet Almonds*, *reare Eggs*, *Fatty ſubſtances*, *Butter*, *Oyl of Olives*, *Oyl of Almonds*, *Whey*, *and the like*. Theſe although of themſelves they are of ſmall efficacy, yet by the commixture of other Catharticks they require a gentle purgative quality, not to be contemned.

The Lenitive compound Catharticks which are ſold in Shops, are theſe: *Caſſia extracted with, or without Senna*, *Diacaſſia*, *Electuarium Lenitivum*, *Diaprunum lenitivum*, *Electuarium paſſulatum*, *A common Decoction for a Medicine*, *A Decoction of Flowers and Fruits*, *Syrup and Honey of Violets*, *Syrup of Roſes ſolutive*, *Honey of Mercury*, *Honey of Raiſins*, *Conſerve of damask-Roſes*, *Of the Flowers of Mallows*, *of Violets*. To theſe may be ſubjoyned ſome extempory forms. As

Take *of the beſt Calabrian Manna* ſix drams, *Cremor of Tartar* ſeven grains, *Poſſet-Ale in which a few Anni-ſeeds have been boyled* an ounce and an half. Mingle and give them in the morning.

Take

Take of Polypodium of the Oak two ounces, *White Tartar prepared* two drams, *ſweet Apples* twelve handfuls, *Raiſins of the Sun ſtoned* one ounce: *Boyl them in a ſufficient quantity of Water to a pound.* In the *Decoction* infuſe all night long *Choice Senna* an ounce and half, *Rhubarb* two drams, *Pulp of Caſſia new drawn* half an ounce, *Tamarinds* an ounce, *Liquoris, the Seeds of Annis* and *Coriander*, of each a dram and an half: The next morning ſtrain it through a linnen Cloth, and to eight ounces of the *Decoction* add *white Sugar* ſix ounces; Boyl it a little, and when you have done ſo, add to it *Manna* diſſolved in *Syrup of Roſes*, of each two ounces; *Syrup of Violets* one ounce: Make of them a *Lenitive Syrup.* Let the diſeaſed Child take an ounce either in *Succory Water*, or *Water of Pellitory of the Wall*, with a dram of the *Juyce of Lemmons.*

Take *of Lenitive Electuary* one dram and half, or two drams; *Syrup of Roſes ſolutive* two drams and an half, *Cremor of Tartar* ten grains, *Poſſet-Ale* a ſufficient quantity: Mingle and adminiſter them early in the morning.

Take *of Aloes waſht*, or *Aromatical Pils* ſeven grains; Make two *Pills* with *Syrup of Roſes ſolutive*, put them into two *Candied Cherries, the Skins being pulled off*, and let them be ſwallowed whole, leſt the taſt be offenſive, about ſleeping time in the evening. In the morning give to drink after them, one ounce of *Syrup of Roſes ſolutive* in *Poſſet-Ale.* Or

Take *of Syrup of Roſes ſolutive* ſix drams, *Violets* half an ounce, *Juyce of Lemons* one dram, *Electuarium Paſſulatum* one dram: Mingle them with *Succory* or *Pellitory Water*, and give them in the morning faſting. Thus much of thoſe Medicines as clear the firſt paſſages.

CHAP.

CHAP. XXXI.

Remedies Preparatory, and their Uſe.

THeſe Remedies partly relate to the preparation of the Humors, partly to the wayes thorow which they are to be expelled, and partly to the paſſages themſelves, wherein they are contained. Now it muſt be known, That the Evacuation which is perfected by Vomits, doth leaſt of any pre-require any preparation; but that which is accompliſhed by *Cathartick* or Medicines Purging, doth moſt of all exact it.

Firſt, The Humors in general to be prepared are either Flegmatick, namely cold, which muſt be qualified and tempered with hot, thick things, and muſt be attenuated; viſcous, and muſt be cut and opened; or Cholerick, namely, ſharp, bitter, burning, corroſive, which are to be mitigated with lenifying and aſſwaging Medicines; or Melancholy, namely earthy, feculent, tartarous, which by a benignity of application muſt be rendred fluxible; or laſtly, ſerous and wateriſh, which muſt be diſpoſed, and as it were manuducted either to the Urinary paſſages, as by piſſing, or to the Belly as by ſiege, or to the parts near the Skin, that they may with the more facility evaporate by Sweating.

Secondly, The wayes thorow which the Evacuation muſt be effected, ought alſo to be made fit and prepared, and

and not only the common, but alſo the ſpecial, by which the *peccant* matter in particular is conveyed to thoſe common Channels. For there is one preparation of the Veſſels of the Kidneys (which is chiefly expedited by Medicines of a ſlippery and looſning faculty) another of the Veſſels of the Liver, which is done by opening, cleanſing, and ſomewhat aſtringent Medicaments: A third of the Veſſels of the Lungs, which is moſt ſucceſsfully wrought by Lenient and Maturant Remedies, ſometimes perhaps according to the nature of the matter, Medicines incident or attenuant being adminiſtred, or on the contrary, Adminiſtrations making thick, and ſuch as have a vertue to arreſt and avert the flux.

Thirdly, Thoſe parts wherein the vitious humors principally flow or are lodged, require the admixture of Medicaments peculiarly appropriated unto them. And as this or that part is more or leſs affected, ſometimes choice muſt be made of *Cephalicals*, ſometimes *Hepaticals*, and ſometimes *Pectoral* Preparations.

Moreover, (that we may comprehend together moſt if not all of the qualities of Preparatory Remedies required in this Affect) we ſay, That theſe Remedies preſcribed by Art ought to be moderately hot (unleſs there be a Feaver preſent) alſo attenuant, incident and opening; in like manner, that by a peculiar right they muſt have reſpect to the Liver, the Lungs and the Head, which parts for the moſt part are commonly in this Affect oppreſſed with a plenitude of humors: Again, That there are ſome things ſpecifically appropriated to this Affect: and if ſuch things are not in Readineſs which are regiſtred in the number of things preparatory, and dedicated to the Diſeaſe, than at leaſt other Specifics ought to be mingled with the Preparatory Medicines.

Theſe things being premiſed, we judged it expedient to ſet down ſuch Simple and Compound Medicines as are uſually ſold in the Shops, and alſo ſome examples of decompounded Preparatory Remedies. Yet we forbid the expectation of all Simples, or perhaps of any one that ſhould comprehend all the qualities, which even now we attributed to thoſe exquiſite and appropriate Remedies; for then there would be no need of any Compoſition, and we ſhall reckon up ſuch and ſo many, that a prudent Phyſitian may ſelect and contemper them among themſelves, which being diſcreetly intermingled, they may be correſpondent to all the fore-recited qualities.

The *Simples and Compounds* prepared in the Shops in readineſs are theſe. *All the Capillary Herbs*, eſpecially *Tricumanes, Rhue of the Wall, Spica, Roots of Oſmund royal; the Buds of the male Fernbrake newly ſprung up, Polipodium of the Wall, Hartſtongue, Liverwort, Ceterach, Agrimony, Dodder, Scabious, Betony; the Leaves and Bark of Tamariſk, the Bark of the Root of the Caper-tree; the Roots of Succory, Endive, Graſſe, Sparagus, Myrobalans; Liquoris, Raiſins, Prunes, Damſens; the Seeds of Anis, ſweet Fennel, Coriander, Caraway, Dill; Syrup of Maidenhair and Betony, Simple and Compound, Syrupus Bizantinus, Syrup of Succory, Eupatory the five Roots, Stœchadis and Hartstongue.*

Out of theſe, according to preſent Emergencies diverſe others may be *Decompounded*. As take *the little Buds or Gems of the Roots of the male Fernbrake five in number; boyl them in half a pound of Milk to three ounces; let him drink the Decoction in a morning upon an empty Stomach.* This is moſt agreeable to young Children that are uſed to Milk. Or,

Take

Take *of the Buds of male Fernbrake newly budded out of the Earth*, one handful; *male Betony, Hartſtongue, Liverwort*, of each half an handful; *Flowers of Tamarisk* one pugil; *Raiſins* one ounce and an half; One *Chicken the Guts pulled out, and with a ſufficient quantity of Oatmeal, make your Broth according to art.* Let the Child take three or four ounces in the morning, and at four of the Clock in the afternoon, adding (if you pleaſe) ten grains of the *Cremor of Tartar.* Or

Take *Maidenhair, Liverwort; Agrimony, Dodder*, of each half a handful; *the Roots of male Fernbrake, Graſs, Sparagus*, of each half an ounce; *Flowers of Tamarisk* one pugil, *Raiſins* one ounce, *White Tartar prepared* one dram, *Liquoris* half a dram, *Mace* one ſcruple: Boyl them in two pints of *Fountain-water.* To one pound of the *Decoction* add three ounces of *White* or *Rheniſh wine, Syrup of Hartſtongue* one ounce and an half: Mingle them, and make your *Decoction*, whereof let the Child take a draught every morning, and at four of the Clock in the afternoon. *This is moſt prevalent and effectual againſt pertinacious Obſtructions in the Miſentery, Liver, &c.* Or

Take of *Coltsfoot, Maiden-hair, Hartſtongue, Liverwort*, of each half an handful; *the Roots of ſweet Chervil* and *Sparagus*, of each half an ounce; *Spaniſh Liquoriſh* two drams, *Mace* a ſcruple, *Raiſins of the Sun* ſtoned an ounce; *Jujubes* by number ſix, *Sebeſtens* eight, two *Figs cut in pieces*: boyl them in a ſufficient quantity of *Barley-water*, and to a pound of the *Decoction*, add *Syrup of Maiden-hair* an ounce and an half: Mingle them together; and this is a very good Drink for ſuch as are troubled with an obſtruction in the *Lungs.*

Take *of ſweet Wort* two pound, *Liver-wort, Maiden-hair, Hartſtongue, Scabious, Coltsfoot, Featherfew,* of each an handful; *blue Figs cut in pieces, Raiſins of the Sun,* of each half a pound; *Liquoris, Anni-ſeeds,* of each two drams: boyl them over a gentle fire nine hours, ſtrain it, and keep it for your uſe. It's good for that the former was.

Take *Sarſaperilla cut and well beaten* three ounces, *the Roots of China, Hartſhorn ſhavings, Ivory,* of each one ounce; *the Leaves of male Betony, Liver-wort, Scabious,* of each three handfuls; *the Buds of the Root called Royal Oſmond and Fernbrake,* of each two ounces: Boyl them in four gallons and a pottle of new Ale four or five hours over a gentle fire: Then after ſome hours reſpit ſtrain it thorow an Hair-Sieve: afterwards put in of the *Juyces of Scurvigraſs* and *Brooklime,* of each half a pound; a ſufficient quantity of *Barm* or *Yeaſt*: Let it work according to the uſual manner, put it into a little Veſſel and draw it out for the ordinary drink. *This is moſt conducible, where there is any ſuſpition of the Scurvy or* Venereous Pox, *being complicated with the* Rachites.

CHAP.

CHAP. XXXII.

Remedies Electively evacuant.

THe matter of the Diſeaſe being prepared, and the paſſages opened to facilitate the evacuation, the next thing is, To conſider what remedies will electively expel the peccant humors in particular. Now theſe Medicines do partly concern the humors, and partly the parts wherein they are lodged; but in each of them a due regard muſt be had to the Spirits.

The violent muſt be either totally prohibited, or elſe exhibited after a due correction or a circumſpect diminution of the doſe; and for younger Children, and ſuch as are weak, they muſt be the leſs in quantity, and the more gentle in quality; for great and luſty Children you may prepare ſtronger remedies, and in a larger doſe, provided that they exceed not the ſtrength of the Child. In both cauſes it is ſafer to favor and go leſs then the ſtrength will bear, than to tranſcend it in the leaſt degree: and in this affect it is altogether better to proceed by an *Epichraſis*, then together and at once to attempt the full evacuation of the peccant humors.

Moreover, the predominant humors in the Body require proper and peculiar remedies; as Choler, Medicines purging Choler: Flegm, Medicines purging flegm: Melancholy, Medicines purging Melancholy: and wateriſh, ſuch as purge water.

Again, If the Liver be oppreſſed with humors more than the other parts, ſuch *Cathartick*s muſt be choſen as peculiarly belong to the Liver. In like manner the Lungs being vehemently infeſted, or the Brain, and the other parts, ſuch remedies muſt be choſen as are appropriated to thoſe parts. But if there be not a ready ſupply of purging Simples peculiarly dedicated to thoſe parts, that defect muſt be made good by a prudent commixture of ſuch ingredients as are familiar to thoſe parts.

Laſtly, You muſt endeavor (as much as poſſibly you can) to make choice of ſuch purgers as are directly oppoſite to the Eſſence of the Diſeaſe. In this reſpect we commend *Rhubarb* above all other Simples. For it is *a Medicament moderately hot and dry, very familiar to the inherent* Spirits *of all the parts, it gently diſpelleth the ſtupefaction of the parts, and ſtrengthneth the ſoftneſs and looſeneſs of the parts, ſomewhat correcteth the internal ſlipperineſs, ſummons the Pulſe to the Arteries, and encreaſeth the heat of the outward parts, and finally it cheriſheth the vigor and activity of the inner parts, and eſpecially of thoſe which are ſubſervient to nouriſhment.* Add in a word, *That it exceeding rarely* (provided that you give it in a juſt doſe) *cauſeth ſuper-purgation, for it is a Medicament ſafe for all Ages, and every Complexion.*

Theſe things being premiſed, we ſhall propound ſome ſimple purgative Medicines, and ſome examples of the Compound. For nothing hindreth, but that many of the pre-recited lenitives, may be commodiouſly referred hither, though in a different reſpect. For there they are conſidered as quickners of the lenitives which of themſelves are ſomewhat dull: But here rather as they qualify and attempt the violence of the ſtrong.

Simple

Simple and Compound purging Medicines which are sold in the shops.

Manna, Cassia fistula, Tamarinds, all the sorts of Myrobalans, Rhubarb, Aloes, Syrup of Roses solutive, Syrup of Cichory, with a double quantity of Rhubarb, Syrupus Augustanus, Scammony, Agarick, the seeds of bastard Saffron, Mechoacan, Jalap, Turbith, sweet Mercury, Syrup of Roses solutive with Agarick, Epithymum, Polypody of the Oak, Senna, Syrup Magistralis against Melancholy, Syrup of Apples of King Sapor, *Diabalsamer, Electar. lenitivum de prunis. solut. Electar. passulat. Diacatholicon, Confectio Hamech, Benedicta Laxativa.*

Some Examples of extemporary Compounds.

Take Syrup Augustan one ounce, Syrup of Roses solutive two drams, Succory-water half an ounce; to dissolve the syrups, make a potion to be administred in the morning upon an empty stomach.

Take the best Rhubarb beaten to powder eighteen grains, Syrup of Succory with a double quantity of Rhubarb six drams, Syrup of Roses solutive two drams, water of the leaves of Fernbrake six drams, mingle them for a potion, this agreeth best with Cholerick Constitutions, and such whose Livers are distempered.

Take the leaves of Senna, Polypody of the Oak, Epithymum, of each a dram, Rhubarb one scruple, Chrystal of Tartar, Fennel-seeds, of each a scruple, make an infusion in a sufficient quantity of Fumitory water; to the strained infusion, add syrup of Magistralis six drams, Cinnamon-water seven drops; else Langius his Antipeleptical water half a scruple: mingle them for a potion accommodated to Melancholy Constitutions.

Take the leaves of Senna two drams, the pulp of Tama-

rinds six drams, the seeds of Anise, Liquoras of each half a dram, Cremor of Tartar half a scruple, make an infusion in a sufficient quantity of Fountain-water for the space of a night, with three ounces of the strained infusion, make an emulsion according to art with sweet Almonds blanched half an ounce. The four greater cold seeds, of each two scruples, for two doses, adding to each dose syrup of Succhory with a fourfold quantity of Rhubarb, and the best Manna, of each three drams. This qualifieth and evacuateth sharp and adust humors.

Take lenitive electuary three drams, Rhubarb a scruple, Cremor Tartar and Anni-seeds, of each half a scruple, the flower of Burrage and Rosemary, of each half a Pugil, Fumitory-water as much as is sufficient: after you have infused them certain hours, strain it through a thick Cloth. And to an ounce and half of the infusion, add syrup of Apples of King Sapor, half an ounce: mix them together for a potion.

Take Elder flowers a pugil, Rhubarb two scruples, Jalap, Mechoacan, of each a scruple, Cremor Tartar half a scruple, Nutmegs fifteen grains, first infuse them, then boyl them gently in the water of broom flowers and Rhenish Wine, of each so much as is sufficient, strain it. And to an ounce and an half of the decoction add syrup of Roses solutive half an ounce or six drams: mix them together, and make of them a potion, which will be very agreeable for such Bodies as are troubled with flegmatick or dropsical humors, or a Cachexia.

Take of the leaves of Senna a dram and an half, Rhubarb two scruples, Agarick trochiscated one scruple, Tamarinds two drams, Anni-seeds, Cremor Tartar, of each a scruple, Rosemary flowers a pugil, make an infusion in a sufficient quantity of Fountain-water, and after a very gentle boyling to an ounce and an half of the decoction, add

syrup

ſyrup of Roſes ſolutive with Agrick, Magiſterial ſyrup againſt Melancholy, of each three drams, mix them together for a potion to cleanſe the Body of mixt humors.

Take the leaves of Senna one dram and an half, or two drams, Agarick trochiſced half a dram, Fennel-ſeeds half a dram, flowers of Chamomel ten in number. Boil them in a ſufficient quantity of Fountain-water, and to ten drams or an ounce and an half of the decoction, add half an ounce or ſix drams of ſyrup of Roſes ſolutive with Agarick, Manna three drams, mingle them for a Potion dedicated to evacuate thick and flegmatick Humors.

Take ſweet Mercury fifteen grains, conſerve of violets one dram, powder of Gum Dragon one grain. Mingle them, and make them into a Bolus with ſyrup of Violets, to be given in the morning, drinking after it an ounce of ſyrup of Roſes ſolutive, diſſolving a draught of Poſſet-drink. This is moſt proper for ſuch Children as are troubled as well with the Rachites *as the Worms; and on the contrary, alſo for ſuch as have the* French-Pox, *complicate with the* Rachites: *alſo to ſuch as are troubled with a* Struma.

Take ſweet Mercury twelve grains, Jalap eleven grains, Nutmegs half a grain, the pulp of Raiſins a dram. Mingle them, and with ſyrup of Violets make a Bolus to be taken in the morning. Inſtead of Jalap, you may make uſe of Diagrydium, to three or four grains: This is proper for Children that are afflicted with Strumatical Affects, *and ſuch as are ſuſpected to have the* French-Pox, *and ſuch as are difficultly purged, and are averſe from Remedies of an ungrateful taſt.*

Take of ſweet Mercury a dram, gummy Jallap half a ſcruple, white Sugar diſſolved in Betony-water three drams or half an ounce, make them into Lozenges according

ding to art of a dram, or two ſcruples and an half weight, of which let the diſeaſed take one at a time.

Take the beſt Rhubarb one dram and an half, Raiſins of the Sun, the ſtones being pickt out, one handful, a pint of ordinary Ale, infuſe them for twelve hours, ſtrain it, and give it to Children that are greedy of drink in the night-ſeaſon.

Take Aloes ſuccotrine ſeven grains, Rhubarb in powder eleven grains with ſyrup of Roſes ſolutive, ſo much as is ſufficient to make it into pibbles which muſt be given in preſerved Cherries, the ſtones being taken away, or elſe you may guild them for the more eaſie ſwallowing.

CHAP. XXXIII.

Specifical alterant Medicines.

THe cauſes of the Diſeaſe being now prepared, and in part evacuated, or at leaſt ſo ſubdued, that for the preſent they cannot retard the cure, you muſt proceed to theſe Medicines *ſpecifically alterant*, which as it were fly at the very throat of the Diſeaſe, and in regard whereof the premiſed Medicines both preparatory and evacuant took place.

Now theſe ſpecificals may be defined to be, *Remedes diametrically contrary to the Nature of the Diſeaſe, and ſuch as directly impugn it.*

Theſe are either Simple or Compound, the Simple which hitherto we have had knowledge of, are theſe that follow;

follow; the root of *Osmond* the *Royal*, or rather the spike of the root, the middle being thrown away, the root of the male *Fernbrake*, *or rather*, the little buds before their peeping forth out of the Earth; the roots of *Grass*, *Succory*, *Asparagus*, *Madder*, *Eringo*, all the *Maiden-hairs*, *Ceterach*, *Hartstongue*, *Liverwort*, *Betony*, the Flowers and Leaves of *dead Nettles*, *Borage*, *Sage*, *Rosemary*, *Tamarisk*, *Southernwood*, *Pontick Wormwood*; the greater *Selandine*, *Saffron*, *Turmerick*, the roots of *Sarsaperilla*, *Sassaphras*, *China*, the three sorts of *Sanders*, the wood of *Guajacum*, and its *Bark*, *flower of Brimstone*, *steel prepared*, *Crocus Martis*, *salt of steel*, *Wine steelified*, *syrup of steel*, *White and Rhenish Wine*, *Sperma Ceti*, *Musk*, *Ambergreece*, *Castoreum*, *Earthworms*, the Livers of *Frogs* and young *Ravens*, *Woodlice*, washt in white Wine, bak'd in an Oven, and beaten to powder, and such like things.

But if any demand, *After what manner, or by what action these Medicaments do especially over-rule the Essence of this effect?*

We answer, That perhaps it is not necessary, that we presently fly to occult qualities, which for the most part is but the Sanctuary and refuge of ignorance: but that the primary and secondary parts of the Essence of this Disease above described ought to be reduced to Memory: for by making a comparison between those parts, and these Medicaments, we shall plainly discern an obscure contrariety and repugnance between them. For this Disease consisteth in a cold and moist distemper inherent in the Spirits together with want and astonishment of the Spirit and weakness of the parts afflicted: on the contrary, these remedies heat and dry, cherish the Natural Spirits, dissipate that numbness which is in them, and strengthen the parts.

More-

Moreover, In regard that theſe remedies with their heat and drineſs obtain withall a manifeſt friability and thinneſs of parts, it comes to paſs, that they cut through all viſcous matter, they attenuate all groſs and thick humors, and procure a certain equality of all the juyces that have their circulation in the Sanguinary Maſs, and an even diſtribution (conſideration being had of the diſtance from the fountain of heat) both of heat and Blood. Hereupon the external parts which before were lean, enjoy a more liberal heat and nouriſhment, and the *Pareuchimata* of the Bowels which were irregularly encreaſed, are delivered from thick and viſcous alimentary juyces, and thereupon are ſomewhat leſned: by this means that *Alogotrophy* or irrational Nouriſhment of the parts, from whence ſo great a ſeries of organical faults reſulteth, is corrected. Finally, theſe remedies do alſo ſtrengthen and cheriſh the ſinewy parts, and likewiſe the extream weakneſſe of the Bone of the Back.

You will ſay, That all the Simples above recited by us, do not fully perform all theſe things. For the ſeveral kinds of Sanders, though they may by their drineſs, friability and thinneſs of parts ſtrongly impugn this Diſeaſe, yet by their coldneſs they ſeem rather to come near to the parts of the Diſeaſe, we ſay therefore, that Simples of this Nature ought not to be given alone, but being commixt with ſome other, which may prevalently correct the noxious quality; in like manner ſome Simples extreamly hot, as *Saffron*, *Caſtoreum*, *Flower of Brimſtone*, *&c.* are very repugnant to this Diſeaſe, yet you muſt refrain the adminiſtration of them unleſs they be duly attempered. Moreover *Sarſaperilla*, *Saſſaphras*, *Osmund royal*, the kinds of *Fernbrake*, all the *Maiden-hairs*, *Hartſtongue*, *Ceterach*, and the like, their

their heat and drineſs being conjoyned with a notable friability and thinneſs of the parts they contribute very much to the equal diſtribution of the Blood, as alſo to ſubdue many other parts of the Diſeaſe. But they ſcarce lend a ſufficient ſtrength to the ſinewy and fibrous parts; wherefore they ſeem to crave an admixture of Cephalical Remedies. Again, *Lignum vitæ* by its heat, drineſs and friability, and by its Balſamical and Roſiniſh ſubſtance, doth very much ſtrengthen the *Tone* of the parts, and is contrariant to ſome other parts of the Diſeaſe; yet becauſe it helps very little the contemperation of the Juyces contained in the Sanguinary Maſs; but on the contrary is rather an hindrance thereunto, it ought not without great caution to be preſcribed, and that in a ſmall quantity and well corrected. Laſtly, Among the Simples here recited, ſome are received to ſtrengthen all the Spirits rather than to ſubdue the Eſſence of the Diſeaſe, as Sage, Muſk, Ambergreeſe, and the like, which come not into uſe but when they are mingled with other effectual and more appropriate ingredients.

If any ſhall further demand, *which among all theſe propounded Simples are to be valued as the moſt noble and effectual*; we comprehend our anſwer in theſe Rules.

Firſt, They are moſt noble Medicines, which joyntly make the ſtrongeſt oppoſition againſt moſt parts of the Eſſence of the Diſeaſe.

Secondly, Thoſe *Cæteris paribus* are to be eſteemed the moſt noble, which directly affront the Eſſence of the Diſeaſe, eſpecially if at the ſame time they advance the equal diſtribution of the Blood and Vital Spirit, whereby ſo many organical faults are corrected.

Thirdly, Such things as oppoſe the Diſeaſe moſt eminently by an eſſential contrariety, provided they be

not

not as well too ſtrong for Nature as the Diſeaſe.

Fourthly, Thoſe which are both repugnant to the Diſeaſe, and yet withall, grateful to Nature, in no wiſe offering any violence to her.

Fifthly, Thoſe which are moſt grateful and pleaſing to the ſick Child, and ſuch as adminiſtred trouble not its Palate.

Theſe things being premiſed, we ſhall now ſubjoyn ſome examples of compound Medicines.

Decoctions, and Phyſical Drinks.

Take the Spikes of the Roots of Oſmund the royal, ſix in number; Pauls-Betony, Hartſtongue, Ceterach, Liverwort, Maidenhair, of each one handful; Sage and Roſemary Flowers, of each half a handful: ſmall Raiſins three ounces, Spaniſh Liquoris half an ounce, Mace two ſcruples; Boyl them in ſix pound of Fountain-Water; take three pound of the Decoction, and add unto it three ounces of the Syrup of Maidenhair, mingle them and make your *Apozem.* Let the Child take a draught of it every morning, another at four a Clock in the afternoon, and a third in the night, if he then call for Drink; yea, if it pleaſe him, let him take it for his ordinary Drink. This is moſt proper for thoſe who are ſadly afflicted with the *Rachites*, complicated with a cough, and an obſtruction of the Lungs.

Take the Leaves of Royal Oſmond, Harſtongue, Liverwort, Ceterach, the Flowers of Tamarisk, the Roots of the Male Fernbrake, of each a handful; Raiſins two ounces, white and red Sanders, Saxafras Wood, of each two drams; Coriander-Seeds one dram, Mace one ſcruple, Sage Leaves half a handful; boyl them in a ſufficient quantity of Fountain Water according to art, to three pound; Let the Decoction be ſweetned with Sugar or Honey for ordinary Drink. This is beſt for ſuch whoſe Liver is moſt afflicted.

Take,

Take *Sarſaperilla* cut and beaten three ounces; the roots of *China* cut into little pieces, two ounces: Infuſe and boyl them according to art in ſeven pound of *Fountain Water* to four and an half: then add two drams of *Saxafras roots*, *the roots of Oſmond royal*, *the leaves of Hartſtongue*, *Ceterach*, *Maidenhair*, *Archangel*, of each half a handful; *Spaniſh Liquoris* two drams, *Mace* a dram: boyl them to three pound. To the *Decoction* add *Honey* or *Sugar* three ounces. Mingle them for ordinary drink. This is moſt conducible where there is ſuſpition of the *French-Pox*, as alſo in *Strumatical Affects*.

Take the *Flowers of Tamaris* one handful; *the male Pauls-Betony* half an handful: bruiſe them gently, and infuſe them in two pound of *Common Beer cold in a ſtone or glaſs Flaggon*, *well ſtopt with a Cork for the ordinary drink*.

Take *Sarſaperilla* eight ounces, *China* two ounces, *Saſſafras* half an ounce, *Ivory* an ounce; *Oſmond royal*, *Pauls-Betony*, *Hartſtongue*, *Ceterach*, *Maidenhair*, *Liverwort*, *tops of dead Nettles*, of each two handfuls: cut them, and bruiſe them according to art, and boyl them in four gallons of *new Ale* till one be conſumed; then when you have taken it from the fire, add another gallon of the ſame *Ale* to it, and when you have added it, ſtir it up and down with a ſtick, and when you have done ſo, ſtrain it, and when you have ſtrained it, put the Ingredients in a Boulting-bag, and put a piece of Iron into them, and add a bit of *Leaven* to it, and hang it into the *Ale* with a ſtring, and let the Child drink it for its ordinary Drink; ſo ſoon as it hath drunk half of it, draw out the reſt, and ſtop it cloſe in ſtone Bottles for the Childs uſe.

Take *Wine of Steel* half an ounce; Syrup of *Succory* with

With Rhubarb two drams: let the Sick drink of it every morning for five or seven daies or longer, unless some looſneſs of the Bowels or debility of the Stomach do adviſe a prohibition: in which caſe, inſtead of *Syrup of Succory with Rhubarb*, take *Syrup of dried Roſes.*

Broths and *Panadaes.*

Take *Hartſtongue* and *Cetrach*, *Liverwort*, *Maidenhair*, *Sage*, of each half an handful; *the Bark of Tamaris*, *red Sanders*, of each two drams; Put them into the Belly of a Cock-Chicken or Hen, or an old Cock. Sew up the Belly, and boyl it with two ounces of *Malaga Raiſins* in a ſufficient quantity of *Fountain-water*, adding alſo a ſufficient quantity of *pure Oatmeal-flower*: Make your Broth, and let it be ſoundly boyled.

Take *the roots of China cut into ſmall bits* two ounces, *white and medullous Sarſaperilla ſliced and well beaten* three ounces: Infuſe them for a night in ten pounds of *Fountain-Water*: In the morning after a gentle bubling, ſtrain it, and to the Decoction add *Hartstongue* and *Pauls-Betony*, of each an handful; *Mace* half a dram; *Currance* an ounce: and with *Mutton*, *Veal* or a *Capon*, adding *Oatmeal*: make your Broth according to art.

But if thinner Broths be more deſired, you may boyl a cruſt of *Bread* inſtead of the *Oatmeal*; and if you would have it thicker, you may mingle with it the *yelks of Eggs* and *grated Bread*: Moreover, to help a weak concoction, you may ſometimes add a few ſpoonfuls of *Wine.*

Panadaes alſo may be made of the ſame Broth ſtrained, and boyled again with grated *Bread*, adding at length

length a little *Butter* and *Sugar*. The same likewise may be made of the *Decoctions* even now prescribed, unless peradventure they contain some bitter and unpleasing mixture. Moreover, the *Panadaes* and ordinary Broths may be altered with these ensuing Powders, and by consequence appropriated to the cure of this Affect; if the Child desire *Milk* most, let them be made in *Milk*; if the Child desire it thick, you may make it thick either with *Flower*, or *Oatmeal*; and if you mix a little *Saffron* with it, it will be the better. But if any thing in the Powders do nauseate and offend the taste, let them be omitted, and substitute some other things that may be more acceptable to the Palate.

Powders and *Electuaries.*

Take *the Roots*, but rather the *Buds* of the *male Fernbrake scarce sprong out of the Earth*, *and dried in a shady place*; *the spike of Royal Osmond*, of each two drams; *Mace*, *Anniseeds*, of each half a scruple; *Saffron* half a grain: make a Powder. The dose from half a scruple to a scruple, in *Milk*, or *Posset drink*, some *Decoction*, *Broth* or *Panadaes*.

Take the *medullous part of the Root of Sarsaperilla* two drams; *the Roots of China* one dram; *the Root of Sassafras* one scruple; *the seeds of Caraway* and *Coriander* of each half a scruple; *the Roots of the male Fernbrake*, *Osmond royal*, of each two scruples: Mingle them and make a Powder to be used as the former.

Take *Wood-lice*, or as some Countries call them, *Sows washed*, *first in Water*, *and then in white-wine*, *afterwards calcined in a Crucible*; *Bread dried as much as you please*: make them into a Powder. The dose is from half a scruple to a scruple, either in *Broth* or any thing

elſe: In the ſame manner you may if you pleaſe prepare the *Livers* either of *Frogs* or *yong Ravens*: We gave you the manner before.

Take of *Flower of Brimſtone* two drams; *Diarrhodon Abbatis*, *Diatrion ſantalon*, of each half a ſcruple; *Saffron* half a grain; *refined Sugar* three ounces: All of them being made into very fine Pouder, make them into a Paſt with a ſufficient quantity of *Roſe-water*: Dry them, and when you pleaſe you may beat them into Pouder, and give a dram of them at a time.

Take *Conſerve of Red Roſes* one ounce and a half; *Conſerve of the flowers of Borage*, *Archangel*, *Sage*, *Roſemary*, of each half an ounce; *Steele prepared* one dram; *Cinnamon*, *Spaniſh Liquoris*, of each half a dram: *Saffron* half a Scruple; *Red Sanders* a ſcruple: Beat ſuch things (as are reducible) to pouder: make an *Electuary* according to art, with *Syrrup of Succory with Rhubarb* a ſufficient quantity. Let the Sick take half a dram, two ſcruples or a dram every morning, either by it ſelf, or in a ſpoonful of *Poſſet-Ale*, or ſome *appropriated Syrup*, or elſe in *Wine*.

Take *Conſerve of Archangel flowers* one ounce; the *flowers of Sage*, *Clove-Gilliflowers*, *Roſemary-flowers*, *Myrobalans candied in* India, *Citron Pills candied*, of each half an ounce; *red Sanders*, *Cinnamon*, Spaniſh *Liquoris*, of each half a dram; *Salt of Steel*, or elſe *Saffron*, half a ſcruple; with a ſufficient quantity of *Syrup of Wormwood*, make your *Electuary*. The doſe and manner of uſing it is the ſame with the former.

CHAP.

CHAP. XXXIV.

Remedies that correct the Symptomes.

SOme Symptomes ſuperveni'ng upon this Affect, do ſometimes anticipate the legitimate Method of Cure, and require a particular manner of proceeding. Of this ſort are the flux of the Belly, the Lask, wherewith ſomewhat of a Lientery is frequently joyned; profuſe ſweats, laborious and painful breeding Teeth and the Tooth-ach.

The flux of the Belly doth very much follow this Affect; which if it perſevere for any long time, it is either very violent, and eaſily watereth the Spirits, conſumeth the ſolid parts, manifeſtly puts on the nature of a cauſe, and as a cauſe indicates its own correction. A Bloody-flux rarely hapneth with this Diſeaſe. But a Lask with exulcerations in the Guts, or complicated with a Lientery is very uſeful. For in reſpect of the debility to the parts ſubſervient to digeſtion, a *Lask*, or a *Lyentery* may eaſily ſupervene, but not a *Bloody-flux*. Yet there is a frequent concurrence of other cauſes; as of the indigeſted nouriſhment vitious either in quantity or quality; ſome feaver, watchings, worms, painful breeding Teeth, &c. all which things do likewiſe eaſily occaſion a *Lask*, or *Lyentery* rather than a *Bloody-flux*. As for the Cure, it is partly perfected by Purgations, partly by aſtringent Remedies; partly by ſuch as open, and partly by ſuch as ſtrengthen the parts.

These Purgers are most proper which leave behind an evident binding after evacuation; as *Rhubarb*, *Senna*, *Tamarinds*, *Myrobalans*, *&c.* out of which for the most part we frame a *Bolus* or Potions, because they are most easily swallowed under these forms. As,

Take *Conserve of red Roses* half an ounce; *Rhubarb in Powder* twelve grains; with a sufficient quantity of *Syrup of Coral* make a *Bolus* to be given in the morning.

Take *of the Pulp of Tamarinds* one dram; *Rhubarb in Powder* seven grains; *Sugar of Roses* half a dram, with a sufficient quantity of *Syrup of Quinces*, make your *Bolus*. Instead of this Syrup you may use *Syrup of Coral* or *Syrup of Mint*, or *Syrup of Myrtles*, or *Syrup of Pomgranats*.

Take *Senna* half a dram; *Rhubarb* one scruple; *Tamarinds* a dram and an half; *Annifeeds bruised* ten grains: Infuse them in a sufficient quantity of *fountain water*: boyl them very gently: and to an ounce and an half *of the Decoction*, add *Syrup of dryed Roses* half an ounce, mingle them together for a Potion.

Take *Plantane or Succory water*, or *Saxifrage water*, one ounce; *Rhubarb in powder* ten grains; *Syrup Augustan. Syrup of dryed Roses* of each two drams: Mingle them and make your Potion.

It must be observed, That a more full evacuation is sometimes requisite, namely, when the flux hath not been immoderate, or of long continuance, and in the mean time the matter offending hath been copiously collected in the Body. In which case, in lieu of the Syrrup of *dried Roses*, you may take some drams of *Syrrup of Roses Solutive*, *Syr. Augustan.* or of *Succory with Rhubarb* or *Manna*: But commonly the safest way, to augment the dose of *Rhubarb*, or else of *Senna*, not omitting the *Syrup of dryed Roses*.

In

In the evening after the Purgation, you may administer ten grains of *Diascordium* boyled in *Wine*, with *Cloves*, and a little *Cinnamon*, and mixed with a third part of *Erratick Poppy water*, and some cordial Syrrups, as Syrrup of Clove-Gilliflowers to strengthen the Spirits and to stay the Flux; or if the Flux be stubborn, you may mingle two drams of *Diacodium* for a dose instead of the Syrrup aforesaid. Or

Take of Posset-drink made with white-Wine, the Curd being taken off (aromatize it with a little *Saffron* tied up in a rag, crushing it gently between your Fingers) *Confectio Alkermes* one scruple; Pomgranat Pills in powder seven grains; *Diacodium* two drams: mix them together to be taken when the Child is minded to sleep. Or

Take *Laudanum* according to the *London Dispensatory*, half a grain; *Magister.* of Coral twelve grains; Conserve of Clove-Gilliflowers, or red Roses, one scruple, with a sufficient quantity of Syrrup of Quinces, make a *Bolus* to be taken at bed-time.

If there be obstructions, you may prescribe *Crocus Martis*, or Salt of Steel, to be taken in the morning. As,

Take Conserve of Roses one ounce; the Roots of Succory preserved, Myrobalans preserved in *India*, of each half an ounce: Salt of Steel half a Scruple, or *Crocus Martis* one scruple: Cinnamon, Liquoris, red Coral, of each eighteen grains: Saffron a grain and a half: Syrrup of Succory without Rhubarb a sufficient quantity: make your Electuary according to art, whereof let the Child take half a dram each morning. Red hot Iron may be quenched to the same purpose in its ordinary drink.

If the Child be troubled with a violent flux, you may give it ſome binding Conſerves, imagin Conſerve of Sloes, and mix it with ſuch things as the Child delights to eat, but in ſo doing be ſure you pleaſe its Palat.

Sometimes a profuſe and exceſſive ſweating finds a peculiar buſineſs for the Phyſitian in this affect: for it very much waſts the Spirits and retards the cure of the diſeaſe.

Yet caution muſt be uſed not to reſtrain it raſhly, if perhaps there be a Feaver, or if any feveriſh fit, or immoderate heat hath gone before: For in theſe caſes it may be upon a critical time, or at leaſt it may bring more advantage to the Body by the mitigation of the Feaver, than damage by the loſs of the Spirits. For we know not whether any thing doth more potently or indeed more ſweetly expel the feaveriſh heat than ſweating.

In the interim when it floweth inordinately and cauſleſly, it argueth that the body is oppreſſed with obſtructions, with crude juyces and unprofitable ſuperfluities, which whilſt Nature ſtriveth to maſter, and to ſubdue, by that very labor, (the openneſs of the pores withal concurring) it is evaporated by ſweat, and indeed an unprofitable one, very laborious and ſuch as waſteth the Spirits, which therefore as ſoon as poſſible muſt be corrected. This *Hypocrates* meant, where he adviſeth, *That that ſweat which floweth away without cauſe, requireth purgation.* For what can more commodiouſly diminiſh and diſſipate theſe ſuperfluities? Again, this motion is contrary to ſweating, wherefore it meriteth the preheminence among the remedies oppoſed to this Sympton, and ſeeing that it clears the way for Medicines aperient, and ſuch as ſtrengthen the skin, and move forward concoction, (which perfect the laſt part of the cure) it ought in all right to be premiſed before them.

Pur-

Purgative Medicines hitherto belonging, are those that are observed to be friendly, and agreeable to Nature and withall such as open obstructions, and strengthen the Bowels: all which things whither any Simple can perform so well as Rubarb, we very much doubt. Yet all those Simple and Compound Medicaments proposed above in the Chapter of Remedies Elective evacuant, may, according to the Condition of the Patient, and the Prudence of the Physitian, be transplanted hither. Some very much commend Beer in this case medicated with Rubarb.

Take Rubarb cut into many small pieces, two drams; Raisins stoned and slit, one ounce; smal Beer, two pound; put them into a Glass or stone flagon stopt with the best Cork; set it in a very cold place, and stir it very often, but before you use it let it settle again, a whole day, then draw out the liquor for your ordinary drink. when the flagon is empty fill it again with Beer but put not in a new quantity of Rhubarb.

Moreover, The most noble Aperients which both help concoction, and repress unprofitable sweating, are *French wine*, and *Rhenish wine*. But if there be any fear of their heat in this tender age, they may be tempered with rosted Apples, Borage, or red Rose-water, adding a little Sugar and grated Nutmeg, let them be also taken in a lesser quantity and only at meals.

They are likewise the most effectual Aperients, which do not only help concoction, but also strengthen the *Tone* of all the parts, especially of the Bowels. Among which we chiefly commend things made with steel, as wine made with steel, and the Electuary before named, and the like. Now although steel doth indeed effectually perform those things which we have said; yet because it doth not in all respects answer to some other scopes of

great moment in this affect, but doth more hurt sometimes in one particular, than it doth good in another; we thought it expedient to subjoyn these following Cautions concerning the use thereof.

First, Seeing that Steel is an enemy to the Lungs, and doth easily stir a cruel flux of flegmatick matter in tender Bodies, therefore you must totally abstain from the use thereof, where there is any Catharh, Cough, obstruction of the Lungs, and much more, if there be any Inflammation, Pleurisie, Bloud-spitting, or a proness of disposition to any of these effects.

Secondly, Because Steel contributes little or nothing to the operation of the Blood: but on the contrary (however it may attenuate the tough and flegmatick part thereof) doth rather expedite the separation thereof from the other mass of Blood by reason of the tart quality that is predominant in it, it cannot be admitted but with circumspection, especially that inequality of the Blood being so importunate and urgent.

Thirdly, Seeing that the attenuating, cutting and opening faculty in Steel is conjoyned with an apparent and extreme drineſs and binding, and therefore perhaps doth more compact those humours, than dissolve and scatter them; the use thereof ought to be refrained, at least suspected in any considerable *Alogotrophy* of the parts. For the fear is lest it should bind too close and consolidate the short parts of the Bones and those that are too scantily nourished; whereby afterwards they may become less prompt and apt to grow in length: but the parts sticking out (as also the convex sides of the Bones) which are liberally nourished it cannot dissolve, and then there may be a jealousie that it will too much confirm them and make them stubborn; namely by an extreme thickning and hardning of them.

Fourthly,

Fourthly, In all acute Feavers the uſe of Steel is hurtful, becauſe it over-dryeth and bindeth the Parts, yea, for that very regard that it reſtraineth Sweating, and makes the humours more fierce and ſharp.

Theſe Cautions being rightly obſerved, we admit the uſe of Steel in this Affect, but becauſe Mountebanks and Quacks cannot diſtinguiſh between the uſe and the abuſe, we would not perſwade any to make tryal of this noble Medicine without the advice and counſel of ſome prudent and knowing Phyſitian, becauſe if it be not circumſpectly adminiſtred, the danger is very great. Some other Aperients of leſs note may ſerve this ſcope; as the Roots of Succory or Borage, or Conſerve of their Flowers; the Roots of Graſs, Sparagus, Fernbrake, Madder; the Leaves of Ceterach, Spleenwort, Maiden hair, &c. Among the Compounds Species, *Diatr. ſantal. Diarrhod. abbat. &c.* Or

Take of the beſt Sugar three ounces, diſſolve it in Roſewater and boyl it a little beyond the conſiſtence of a Syrup, then add Conſerve of Barberies one ounce; Diatri. Santal. and Diarrhod. Abbat. of each a dram; powder of Saffron, one grain; mingle them and make your Electuary.

The painful breeding and the aking of the Teeth are the familiar Symptomes of the Rachites; and becauſe they breed Feavers, unquietneſs, watchings, and other evils, they alſo deſerve a peculiar mitigation; if the Tooth therefore as it is working through the Gum puts the Child to very much pain, you muſt without delay (unleſs it were done before) appoint ſome univerſal evacuation: as a Vomit, which is thought to be a potent remedy againſt the Tooth-ach. Now that may be moved by the only tickling of the Throat, putting

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in a Feather, or the Nurſes Finger into the Childs mouth; or elſe with rubbing the Tooth that is breaking forth with a Tobacco Leaf wrapped about the Nurſes Finger, and a little moiſtned with Beer; or laſtly, by giving ſome vomiting draught above deſcribed. But this remedy is forbidden reiteration in regard that it too much may weaken the Stomach. The day following (the pain perſiſting or returning) ſome Cathartick Potion or Bolus among thoſe above rehersed, or like unto thoſe muſt be adminiſtred. After this univerſal Evacuation you muſt deſcend to Topical Remedies. Nurſes are wont to rub the Gums with Coral poliſhed for that purpoſe. But the Phyſitians do rather commend the Root of Marſh Mallows, which do mollifie and looſen the Gums that they may obtain the more eaſie paſſage. others report it for a great ſecret to rub the aking Tooth with the Root of the ſharpeſt Sorrel. Others very much commend the rubbing of that Gum where the Tooth is coming out with a Cocks Comb newly cut off, or with the hot Bloud diſtilling from that Wound. We have had no experience of thoſe things which they uſe to inſtill into the Ears; in like manner, neither the Plaiſters of Maſtick, Olibanum, or red Lead, which in thoſe of full growth are obſerued to ſtop the Rheum. Others apply ſmall Epiſpaſtick Plaiſters behind the Ears, which perhaps compel back the matter that breeds the pain in the Teeth. But neither do we interpoſe our judgement concerning theſe things. Only when Univerſals are unavailable, we have recourſe to Hypnotical Remedies, which indeed by outward application profit little, but being taken inwards they are very helpful, eſpecially being rightly prepared and duly corrected. Therefore when want of reſt and watchings beget moleſtation, thus we proceed.

Take

Take Diaſcordium ſeven grains; *Syr. de Meconio*, one dram and an half, or two drams; Poſſet Drink made of Milk and white Wine, with a little Saffron, one ounce or ten drams; mingle them and give it at Bed-time the next night following after the Purgation.

Take Laudanum, according to the London Diſpenſatory, half a grain; the Cordial Powder of the Claws of Crabs ten grains; Conſerve of Clove-gilliflowers one ſcruple, with a ſufficient quantity of Syrup of Balm make a Bolus to be ſwallowed in the evening at ſleeping time. Thus much of ſuch things as correct the Symptomes.

CHAP. XXXV.

External Remedies.

HAving finiſhed the Diſquiſition of the matter and kinds of Internal Remedies, we ſhall now direct our Diſcourſe to external Remedies. Which indeed we have reſerved for the laſt place, not becauſe they muſt perpetually be laſt put in execution, but becauſe they are altogether of a different kind from the internal: now the Univerſals are to be adminiſtred immediately after Evacuants, or at leaſt after thoſe that are elective Purgant, and withall with the Specifical Alterants, unto which kind they belong, although indeed as they are external, they differ from them. Now we deſire that we may here be underſtood by external Remedies to ſignifie and intend every kind of

of *Medicament* which cannot properly be referred to *Chyrurgery*, or thoſe things that are inwardly taken, provided that they have their uſe in the Cure of this Affect.

Therefore we divide it into two Kinds, namely, The *manner of Exerciſe*, and *things externally Applicable*.

The Manner, or *Kinds of Exerciſe.*

All kinds of Exerciſe, unto which Children are accuſtomed, may be uſeful in their time and ſeaſon. But becauſe Children who are moleſted with the *Rachites* are ſomewhat averſe from motion and by reaſon of their weakneſs of Spirit, and unaccuſtomed uſe of Exerciſe do ſcarce after the beginning of the cure, or indeed not at all endure violent motions; therefore they muſt begin perpetually with gentle Exerciſes, and afterwards proceed by degrees to ſtronger; in like manner at firſt they muſt continue but a ſhort time, but afterwards a longer ſpace without any intermiſſion.

We therefore diſtinguiſh Exerciſes into gentle, and vehement or Maſculine. The gentle we referr firſt to the manner of lying down. Secondly, To the agitation of the Body in the Cradle. Thirdly, To the carrying them about in the Nurſes Arms. Fourthly, To ſedentary paſtimes.

Firſt, Lying upon the Back among all the poſtures of the Body doth chiefly recede from Exerciſe, and is almoſt only allowable in the extreme weakneſs of the Spirits, as in acute Feavers when the Spirits are ſpent, likewiſe in many caſes of the Cheſt and Hypochondriacal parts, as frequently in an inflammation of the Liver, Spleen, Lungs, in a Pleuriſie, in the growing of the Lungs with the Pleura, and an Impoſthume, &c.

The

The lying upon one side either right or left cometh neareſt to the Supine Poſition, and participates very little of the Nature of Exerciſe. Wherefore it is alſo allowable in any great weakneſs of the Spirits, at leaſt in regard of altering the poſture of the Body, as alſo when a profound ſleep is not expected. Moreover, it is ſomewhat profitable to ſtrong Bodies in the time of the firſt or ſecond ſleep, after juſt intervals ſtill changing ſides. But afterwards perhaps it is not ſo agreeable unto, nor beneficial for them, eſpecially when the Body is fully refreſhed with ſleep. For then that poſture is beſt which draweth neareſt to the Nature of Exerciſe.

The Simple Lateral Poſition containeth ſomewhat more of Exerciſe, and is inconvenient for weak Bodies and ſuch as are not uſed to it in the time of profound ſleep: but otherwiſe it may be made familiar, if for a while they will accuſtome themſelves unto it. It is at all times good for ſtrong Bodies, provided that a due care be had to alter and vary it.

The lying on one ſide towards the Belly is laborious and troubleſome, and not to be continued long by ſtrong and robuſtious Bodies that are not uſed to it. But the moleſtation being overcome by cuſtom, it is more eaſily tolerated: and becauſe it eaſeth the pains in the Head, helpeth the Concoction of the Stomach, mitigateth the pains of the Collick, and looſneth a coſtive Body, it may be ſometimes uſeful when Nature is throughly ſatisfied with ſleep, and in this affect may ſupply the place of Exerciſe. For it ſometimes hapneth in this Diſeaſe, that Children for ſome time are not without diſadvantage truſted to their own Feet, yea many times they gain more by reſt then walking up and down. For walking rather confirmeth than cureth the bended

bended Joynts; but lying down, when the parts are well ſwathed, conduceth not a little to their erection. Then again, lying down helpeth very much to ſtretch and lengthen the ſhort parts, as may be perceived by the growth of the parts in length after a Diſeaſe. Thirdly, Lying down, in regard of the common Coverings of the whole Body, advanceth an equal diſperſion of the heat through all the parts. Laſtly, lying down, if you obſerve a right way of placing and making the Bed, may contribute very much to correct the Crookning of the Back-bone and the whole Body, for when they lie upon the gibbous and bunched Side, a little bag made for the ſame purpoſe may be laid under the parts ſticking out, and ſo made fit that the gibbous parts may in a manner ſuſtain the weight of the whole Body, and ſo they may be compelled as it were to a ſtraightneſs. But when Children roul to the other ſide, the Bed ſhould be ſo made, that if the little Pillow or Bay be taken away the hollow part ſhould ſcarce touch the Bed unleſs he conform himſelf to a ſtraight line, that by his weight it may be depreſſed to a ſtraightneſs.

Secondly, That kind of exerciſe which is performed *by the rocking of the Cradle ſomewhat emulates this lying down.* The Cradles are ſuſtained upon two Arches, or two parts of the Circle: now the more they have of a Circle, the more effectually they exerciſe the Infant. This motion in time of ſleep muſt be intermitted, or at leaſt remitted; but whilſt the Child waketh it muſt be ſometimes intended, and ſometimes remitted. It is moſt profitable for weak Infants that can ſcarce ſtand upon their Feet, or are otherwiſe hindred from waking.

Thirdly, *The bearing them about in the Nurſes Arms is almoſt agreeable to the ſame Children, and under the ſame conditions*: in like manner the rejoycing of

of the Child whilſt the Nurſe ſingeth, either as it ſits in her Lap, or is held up in her Hands, as alſo the toſſing of it up and down, and waving of it to and fro, and if the Child be ſtrong by holding it gently up by the Hands, if it be weak, under the Arms, yet ſo that the Thighs and the whole Body may hang down. Alſo the drawing of the Children backward and forward upon a Bed or a Table between two Nurſes, the one holding it by a Hand, the other by a Foot. The two laſt motions ſeem to contribute ſomewhat to the erection of the crooked or bended Back-bone, eſpecially if the Hand which is laid upon the depreſſed Shoulder, and the Foot which is belonging to the elevated Hip be drawn with more ſtrength and vehemence than the other hand or foot. To the ſame end alſo tendeth the lifting up of the Child, taking him by his Feet only, ſo that the trunk of his Body and his Head may for a time hang down in an inverted poſture; although indeed this action may alſo ſeem in ſome manner to relate unto the growing to of the Liver, if any ſuch at that time be: as alſo that convolution of the Body, whereby the Head Being lowermoſt the Feet are lifted up; and then again the Head being lifted up the whole Body is inverted. Hitherto alſo may be referred that rouling of the Child, which ſome uſe upon a Bed or Table, the Body being laterally declined: which we more approve if it be not rouled quite round about, but only backwards and forwards, laying a little hard Cuſhion underneath, whereon the gibbous part may reſt, and ſuſtain the weight of the Body. This exerciſe being rightly practiſed doth help much to ſtraighten the Body.

Fourthly, *Sedentery Games and paſtimes* are the leaſt profitable among all exerciſes for Children that have the *Rachites*, and indeed they are only allowable to ſtill

and

and quiet them. But the more beneficial will be to tempt them to a frequent use of their Feet by playing some little Ball or Cat before them that they may be often kicking them. But if the Body of the Child be crooked, such sports must be invented as may allure him to move his body to the contrary side. When therefore one Shoulder is higher than another hold up some Gewgaw or Rattle before the Child that he may stretch out the Hand belonging to the lowest Shoulder to reach after the offered object. But a thousand such like inventions may be found out, and we leave them to the Nurses industry.

The Masculine Exercises of greater note we reduce to these three Titles.

1. To *Going*. 2. To *an Artificial hanging of the Body*. 3. To *Friction, rubbing, and contrectation of the Hypochondries and the Abdomen*.

First, *Ostentation* or *waking* may be numbred among the more noble Exercises. For Children that are big and strong, and used to run up and down every day, do by walking and stirring about, the more easily rid away this Disease. But this kind of Exercise must be refused unto them whose Joynts are not knit and confirmed, and whose Ankles, Knees and Back are so weak that they cannot sustain the Body. For when Children by the negligence of their Nurses are too soon committed to their Feet, it easily comes to pass, that they suffer the Joynts to be bended either inwards or outwards, backwards or forwards, and consequently they are the occasion of that deformity which befalleth the Bodies of most men and women. Moreover, Those Children which have already contracted such a bending in the joynts, either by the natural weakness and loosness of the Ligaments, or by the bad usage or indiligence of the

their Nurſes muſt be truſted to exerciſe their Legs, till ſome ſplents or other inſtruments be provided, which may be able to erect the bended Joynts, and to keep them in an erected poſture. The driving of Children up and down in their Coaches or Chariots is much to the ſame purpoſe, provided that they be ſo contrived, that there be no danger of ſtumbling or overthrowing.

Secondly, The artificial ſuſpenſion of the Body is performed by the help of an Inſtrument cunningly made with Swathing-Bands, firſt croſſing the Breſt and coming under the Armpits, then about the Head and under the Chin, and then receiving the hands by two handles, ſo that it is a pleaſure to ſee the Child hanging pendulous in the Air, and moved to and fro by the Spectators. This kind of Exerciſe is thought to be many waies conducible in this Affect, for it helpeth to reſtore the crooked Bones, to erect the bended Joynts, and to lengthen the ſhort Stature of the Body. Moreover, it exciteth the vital Heat, and withall allureth a plentiful diſtribution of the Nouriſhment to the external and firſt affected parts: and in the mean time it is rather a pleaſure then a trouble to the Child. Some that the parts may the more be ſtretched, hang Leaden Shooes upon the Feet, and faſten weights to the Body, that the parts may the more eaſily be extended to an equal length. But this exerciſe is only proper for thoſe that are ſtrong.

Thirdly, Friction or rubbing may in ſome manner be likewiſe referred to Maſculine Exerciſes: not indeed in reſpect of any active motion in the Child requiſite to the adminiſtration thereof (for it is performed by an action of the Nurſe rather than of the Child) but in reſpect of a like force and efficacy which it hath in the curing of this Affect. Now Friction ſeemeth to be

twofold, as partly belonging to the kind of Exerciſe, and partly to thoſe things which are outwardly to be applied, for which cauſe we have reſerved it unto this place, that it might be the laſt in the number of the Exerciſes, and immediately precede the external applications. This muſt be done (at leaſt in the Winter time) by a warm fire, the Child being in all reſpects well fortified from the injuries of the weather, and the violence of the cold Ayr. Some Nurſes adminiſter this Friction with a hot hand, others with Linnen Cloathes dried and heated; others with Woollen Cloathes; and others again with a little Bruſh; and indeed ſome do moſt commend the Bruſh, and preferr it before the other waies, but becauſe there ſeemeth to be ſo little difference in all the wayes, we approve them all, and leave the choice to the Nurſes wiſdom. But let them begin this Friction at the Back bone, the Child being laid upon his Belly, and let them ſtir their Hands now upwards, now downwards, now on each ſide, then to the Thighs, Hips, Legs, Ankles, the Soals of the Feet, and all the parts of the Body, thoſe excepted where there is a ſticking out of the Bones, and there let them rub the hollow part of them. This action muſt not be continued beyond a moderate ruddineſs raiſed in the parts, leaſt the Natural heat ſhould be ſcattered, rather then cheriſhed. This kind of exerciſe is moſt agreeable to weak Children, and ſuch as are ſcarce able to ſtand or go. For it ſupplieth the defect of running up and down, exciteth the Natural heat, ſummoneth the Vital, and attracteth the Nouriſhment to the affected parts. Yet we grant, that Friction doth not ſo powerfully ſummon the heat and nouriſhment to the Fleſh of the Muſcles, although perhaps it doth more to the Skin, as exerciſe doth properly ſo called, and conſequently that it muſt yield in dignity and nature to true exerciſes. To Friction alſo belongeth that contrectation

tion of the Belly, or of the Abdomen and the Hypochondries, ſometimes lifting up the Bowels, ſometimes depreſſing them, ſometimes removing them towards the right, ſometimes towards the left hand, and ſometimes thruſting in the tops of the Fingers under the Baſtard ribs. And Phyſitians hope, and not without reaſon, that by this action they may deliver the Liver from any preternatural growing with the *Peritoneum*, if any ſuch ſhould chance to be. And here we note by the way, that ſuch growing of that Bowel may eaſily happen in this affect by reaſon of the greatneſs of the Liver, and the ſtretching of the Hypochondriacal parts, whereupon the Peritoneum and the Membrane of the Liver are moſt nearly and ſtrictly conjoyned, and being conjoyned, may remain long in the ſame Poſition, and ſo by the help of time they may eaſily grow together. This growing together in as much as it dependeth (as we have ſaid) upon the ſtretching of the Hypochondries, and the bigneſs of the Liver, it may not incongruouſly be referred to the ſecondary Eſſence of this Diſeaſe, namely, to the organical parts vitiated, among which it deſerves to be reckoned, although above we chanced to omit it in its proper place, and therefore we thought good to mention it here. Thus much of Exereiſe, now follow the External Applications,

CHAP. XXXVI.

Things to be Externally Applied.

THeſe remedies (as we have ſaid) do not only prerequire Friction, but for the moſt part they are adminiſtred with a gentle Friction. Now they are either General or Univerſal, reſpecting all parts alike, or Particular, and dedicated to certain Regions of the Body. The matter of the Univerſals is almoſt the ſame with that which we have propounded above in the Chapter of *Specifical Alterant Remedies*: but the matter of the particulars muſt be diſtinguiſhed according to the variety of the Regions of the Body unto which they are applied. The forms of either kind ſeem to be common, and they are five in number, Liquors, Oyls, Liniments, Oyntments, Plaiſters: although Plaiſters are dedicated rather to certain parts, and never at once applied to the whole Body.

Liquors that have been commended by long experience in this Affect are almoſt all kinds of Wine; but eſpecially Muskadine. But ſome do prefer the Pruiſian Beer, which indeed may help much to ſtrengthen and conſolidate the Parts, but very little or nothing at all to effect the equation of the Blood, or an equal diſtribution of it. The ſame judgment is alſo to be made of Aligant, as alſo of red Wine. Some inſtead of Wine uſe ordinary *Aqua vitæ*, which is believed to be nothing

thing inferior to Wine, Decoctions also may be prepared for the same use. As,

Take the Roots of Royal Osmond, the Leaves of Sage, the Flowers of Marigolds, the Leaves of Bay-tree, Pauls Betony, Hartstongue, of each half an handful; Rosemary, red Roses dried, of each one pugil; boyl them in Fountain-Water, and ordinary Aqua vitæ, of each a pound, to the consumption of the third part; strain it, and keep for your use. Or

Take the roots of the male Fernbrake one ounce, the leaves of royal Osmond, Clary, Bay-tree, Sage, Pauls Betony, of each half a handful, infuse them in some Wine, and keep the strained liquor for your use.

But these Liquors are seldom or never administred alone, but must be mixt with equal parts of *Oyls, Liniments* or *Oyntments*; and indeed they must be used before a warm fire, and rubbed on with a hot hand till they be dry.

Compound Oyls, such as are approved in this Affect are very few, and those ineffectual: but there are many *Simple Oyls*, as Oyls of Earth-worms, Chamomil, Marygold-flowers, Pauls Betony, Neats-foot Oyl, unto which you may also add Oyl of Foxes, Oyl of Whelps, Oyl of Swallows, provided that these last be prepared Simply by themselves without any commixture of extream hot ingredients.

Oyl of Exeter, although some Practitioners use it, and though it be a little hotter then is fit to be used alone to so tender an age as is troubled with this Disease, and so are other things which are vulgarly used, as Oyl of *Castoreum*, or *Jacobi de Manliis*, and *Ung. Antiparalyticis*, and other Oyntments, as *de Nervino, Martiato, Aragon, and the like.* And the reason is, because such a numness afflicts not these as it doth such as are Paralitical, nor

the ſame Defect of Vital Spirits, nor the ſame unequal diſtribution of nouriſhment. But becauſe this is a new Diſeaſe, if any deſire Oyls, Oyntments or Liniments proper to the Evil, let him make uſe of a right Method, an able Phyſitian, a ſpecifical way either of Oyls or Oyntments, as we ſhall ſhew you by theſe examples:

Take the leaves of red Sage, Betony, Pimpernel, Mary-gold-flowers, of each two handfuls: the roots of royal Oſmond ſix ounces, May Butter three pound, white Wine half a pound: cut the Herbs, bruiſe the Roots, and boyl them according to art till the Wine be conſumed: Afterwards ſtrain them being yet hot, and put to them Oyl of Nutmegs drawn by expreſſion one ounce and an half, mingle them diligently, and after ſetling, caſting away the dregs, make your Oyntment, which you may reſerve in a glaſs Veſſel for your uſe. Or

Take the leaves of Brooklime, Chamomil, Watercreſſes, garden Scurvy-Graſs, Pauls-Betony, Motherwort, Maiden-hair, Hartſtongue, Ceterach, Bay-leaves, the tops of Mint, red Sage, Roſemary, Ivy-berries, of each half a handful: the Roots of royal Oſmond four ounces, Muſcadel half a pound, May Butter three pound: cut the Leaves, bruiſe the Berries, and boil them all to the conſumption of the Wine, ſtrain it whilſt it is hot, and ſeperating the pure ſubſtance from the ſetlings, make an Oyntment according to art. Or,

Take the leaves of red Sage, Pauls-Betony, Hartſtongue, ſtinking Gladon, of each two handfuls: the roots of royal Oſmond ſix ounces, the tops of Lavender, Roſemary, Bay-leaves, of each a handful: common Aqua vitæ one pound, Oyl of Neats-Feet and Foxes, of each half a pound, Deers-ſuet, or the ſuet of an Ox, Oyl of Worms, of each one pound: boyl them to the conſumption of the Aqua vitæ: ſtrain out the Oyntment whilſt it is hot, and

making

making a ſeparation of the dregs, keep it for your uſe.

Fourthly, *Take the green leaves of royal Oſmond ſix handfuls: Pimpernel, Marygold-flowers, the leaves of red Sage, Clary, Mother-wort, Brook-lime, Watercreſſes, of each a handful: the leaves of Roſemary, Bay, of each half a handful: chop them together very ſmall, and beat them diligently in a Marble or Wooden-Mortar, with a wooden Peſtle, with ſix pound of unſalted Butter, and ſo let them ſtand fourteen dayes, then melt them gently in a Bath, and as ſoon as they begin to be hot, ſtrain them, and then put in a new quantity of Herbs as before: at length ſtrain and purifie your Oyntment, and keep it for occaſions.*

To theſe general external Remedies ſome particular ones relating to ſome certain parts of the Body may be ſub-joyned: as if the region of the *Abdomen*, eſpecially the Hypocondria be ſtretched, hard and ſwelled, and this ſtretching hardneſs, and ſwelling, would not yield to a Purgation though rightly adminiſtred, then you muſt proceed to Local Remedies: As,

Take Oyl of Capers, Wormwood, Elder, of each one ounce: of the general Oyntment firſt deſcribed, one ounce and an half: mingle them, and make a Liniment.

Or,

Take Oyntment of the opening juyces, Foeſius three ounces, the firſt general Oyntment two ounces, mix them together, and make them one Oyntment: alſo Oyl of Saxafrage made of a manifold infuſion, and boyling of the bruiſed Herb in common Oyl is much to be commended to be mixed with it.

In the time of uſing it, this and the like Liniments or Unguents may be mingled for penetration-ſake with ſome appropriate liquor: As,

Take the flowers of Elder, the flowers of red Sage, Bayberries bruiſed, white Sanders ſlightly beaten to powder, of each two drams; white Wine two pound, ſteep them for three dayes in a cold place in a glaſs Veſſel accurately ſtopt with Cork, and ſhake it twice a day: when you uſe it, ſtrain as much as will ſerve your preſent occaſion, then ſtop your Veſſel again. Or, if you deſire a ſtronger,

Take the roots of white Briony well dryed and ſliced, Bay-berries, Gooſe-dung, of each two drams: Cumminſeeds one dram: the leaves of red Sage, the flowers of Elder, of each one pugil; boil them in one pound and a half of Rheniſh-wine to a pound: keep the Decoction in a cold place diligently ſtopped.

Theſe and the like Liquors mingled with the Oyntment, and heated at the fire, muſt be rubbed upon the Abdomen, and eſpecially the Hypochondries, even to drineſs. Let the Nurſe alſo having well warmed her hands, handle thoſe parts gently, ſometimes preſſing the Bowels upwards, ſometimes downwards, ſometimes to the right hand, and ſometimes to the left, according to our former Directions.

The moſt gallant thing of all is the Balſom of Tolu mixed with any Oyntment or Plaiſter, and ſo applied to the Region of the Back either in form of an Oyntment or Plaiſter.

Plaiſters alſo ſeem to contribute ſomething. As

Take three ounces of *Ceratum ſantalinum*; *Gum Ammoniacum diſſolved in Rheniſh-Wine*, or *in ſome other medicated wine above deſcribed, purified and boyled again to a thickneſſe*, one ounce: make your *Plaiſter* according to art. Spread part of this upon Leather, and lay it upon the right *Hypochondry*, or elſe the left, if the hardneſs be there moſt ſenſible, which indeed is very ſeldom. Or

Ta-

Take the *Juyces of Brooklime, Watercreſſes, Garden-Scurvygraſs, Wormwood, the bark of Elder, the roots of the male Fernbrake*, of each one ounce: *Let the Juyces be purified with a gentle heat, and being extracted, reduce them to a thick body, then add one dram and an half of Mace, and two drams of yellow Sanders in powder.* ℞ ✕✕✕

Take of this Mixture one ounce and an half: Gum Ammoniack diſſolved in Wine, and boyled to a body four ounces. *Mingle them hot, and ſtir them continually till they begin to wax cool and hard, and make a Plaiſter to be applied as the former.*

Moreover, when the Lungs are ill affected, many times *a peculiar pectoral Plaiſter* is very uſeful. As

Take Oyl of Violets, white Lillies, and the Oyntment of Orange flowers, of each one ounce: *Mingle them and make a Liniment to be rubbed with a hot hand upon the Breſt, laying a Lawn Paper over it lined with Wooll or linnen cloth.* To this Liniment you may add a ſmall quantity of *Natural Balſom.* Or

Take two ounces of *Unguent. Pectorale*; an ounce and an half *of ſimple Oyntment of Liquoris*: one ounce of *Oyl of Violets.* Mingle them *and make a Liniment to be uſed after the ſame manner.*

The Oyntment of *Liquoris* is thus made.

Take new and Juicy Liquoris four ounces: *new unſalted Butter waſht in Roſe-water* one pound: *ſlice the Liquoris, and beat it well with the Butter in a ſtone Mortar, afterwards fry them, then ſtrain and ſqueeze them, and repeat the ſame labor thrice with a new quantity of Liquoris.*

Again, Some Plaiſters may be prepared proper againſt the weakneſs of the Back, which very frequently happeneth in this Affect. In the Shops you may have the *Plaiſter of Betony* and *Diacalcithos*, unto which neverthelefs

Nevertheleſs when you uſe them, you muſt add *Maſtich* and *Olibanum in powder*, of each half a dram: the Plaiſter alſo which is called *Flos unguentum* may hither be referred, provided that you omit the *Camphire*, in like manner alſo *Emplaſtrum Nervium*. Or

Take two ounces of the firſt general Oyntment, five of the Herbs that are contained in that Compoſition, cut and chopped very ſmall, yellow Wax four ounces, the pureſt Roſin eight ounces: the Oyntment, Roſin and Wax being melted, add the Herbs, and according to art make a Plaiſter. Or

Take fifteen ounces of the third general Oyntment, Litharge of Gold beaten ſmall and ſifted nine ounces; boyl them together, continually ſtirring them to the conſiſtence of a Plaiſter; then add Wax, Burgundy-Pitch, of each three ounces; Oyl of Nutmegs by expreſſion three drams; Maſtich, Olibanum, Mirrh, of each one dram and an half; Caſtorium half a dram, white Vitriol in powder half an ounce; make your Plaiſter according to art.

The Practitioners in Phyſick differ in the Figure, and about the Application of theſe Plaiſters. Some chuſe a longiſh and narrow Figure, and apply it according to the length of the Back-bone. Others approve a broadiſh and almoſt triangular Figure, here, and they extend it from the Loyns downward upon the *Os ſacrum*, even to the utmoſt end thereof. But when the lower parts of the Back-bone, as alſo the Knees and Legs, namely, thoſe parts which borrow their nerves from the lower part of the Spine,

are weaker than the Superior, we do not judge this later to be a convenient form; but when the upper parts of the Back-bone ſeem to be the weaker, we ſuppoſe the former longiſh form to be the more agreeable. In

In like manner, ſome commend a Liniment for the weakneſs of the Back-bone which conſiſteth of *Jelly of Harts-horn, made with ſuch things as ſtrengthen the Sinews, adding the Flowers of Sage, and the Roots of our Ladies-ſeal.* In the time of anointing, mingle therewith a little *Oyl of Nutmegs by expreſſion, or Oyl of worms,* or *Mans-Greaſe.* And thus much of external Remedies.

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